Critical Coding Cookbook

Intersectional Feminist Approaches to Teaching and Learning

Edited by Xin Xin, Katherine Moriwaki

About

In the context of modern computer programming, the origin tale of code often begins with the Difference Engine and the Analytical Engine invented by Charles Babbage in 19th century Europe. This beginning, buoyed by the industrial revolution and militarization, fostered an embedded set of values into computation aligned with an ideology of standardization, optimization, and flawlessness. “Good” code is efficient code that operates on a scarcity mindset, limited by hardware and energy resources.

And yet, there are histories to math, engineering, and computing that are less prominently recognized because they do not neatly fit into the narratives of capitalist production. Ada Lovelace and her contribution to the development of modern computing has only recently been more broadly recognized. Textile production, which led to the invention of the Jacquard Loom, was a great inspiration to Charles Babbage’s research. Gendered and racialized preconceptions greatly impact what is validated as technical and creative work. We believe that it is time to confront how computational history has been retrofitted to tell a single narrative by recentering marginalized ways of knowing. For example, one may trace back to poe divination to gain a new perspective on the boolean variables. Quipu may be seen as one of the oldest examples of data storage. Fractals, which are often reduced to mathematical formulas in computer science

classrooms can be traced back to multiple beginnings throughout ancient history such as traditional African architecture.

The *Critical Coding Cookbook* perceives history as a messy entanglement rather than a linear graph. There is a growing awareness towards reclaiming ancestral knowledge and a movement to decolonize computation. Through centering marginalized bodies and identities, we aim to build a collection of alternative histories, narratives, and approaches to computation. This volume of material can serve as an open-source educational resource across a spectrum of learning communities.

Xin Xin, Katherine Moriwaki

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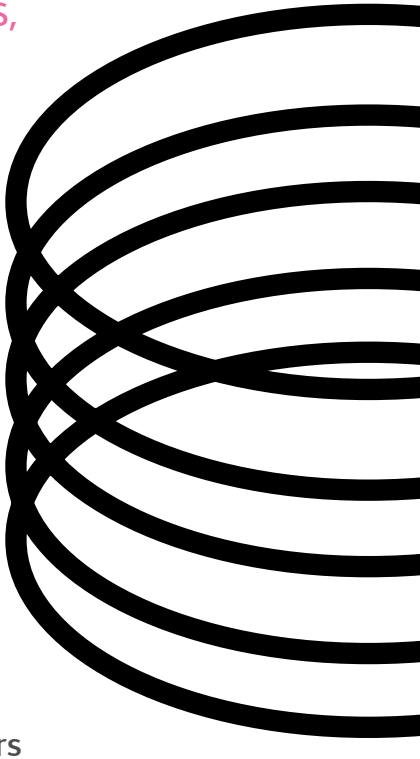

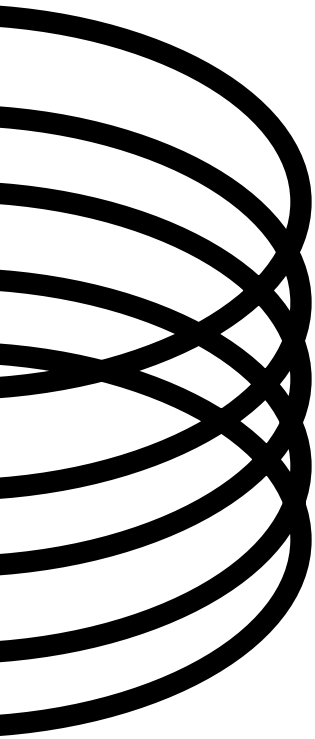

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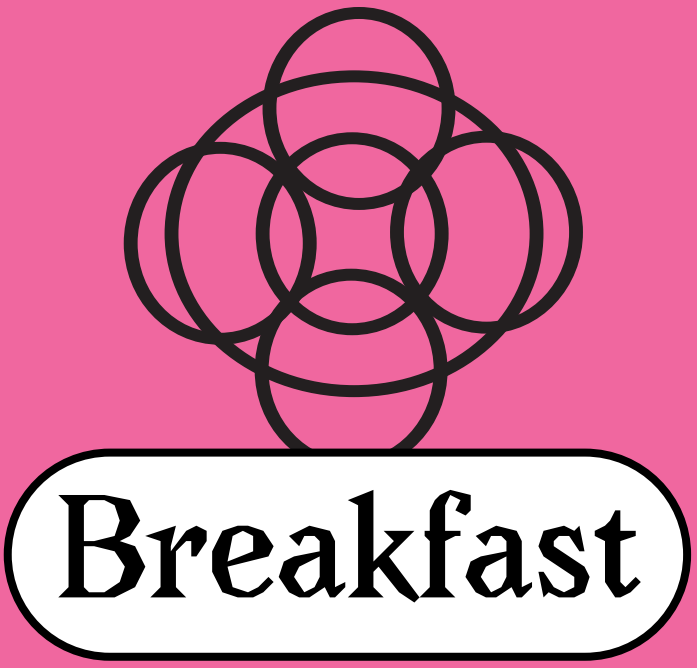

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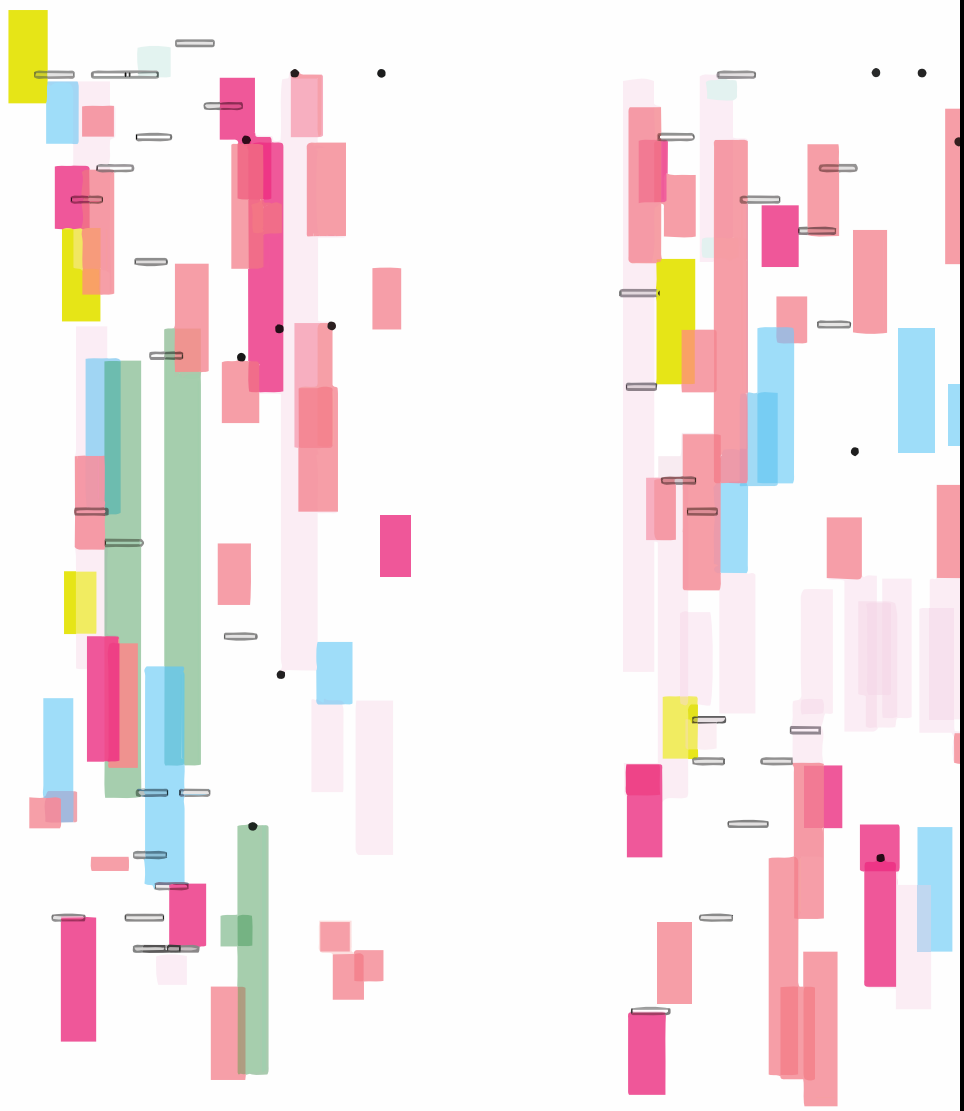
Intersectional Feminist Approaches to Teaching and Learning

CRITICAL DATA PRACTICE AT HOME AND WITH FRIENDS

Kit Kuksenok

#dataFeminism #selfTracking
#dataVisualization

Many of us have difficult relationship to technology that can feel unresolved and isolating. I have found that combining art-making and group discussion about personal data practice can be a joyful and productive method for engaging with such difficulties. Though some of the ideas in this recipe have been slowly developing over a decade of personal art practice, they were brought into being while teaching two courses on the subject at Berlin's School of Machines, and through ongoing collaborations. I initially intended to support critical engagement with the methods of the "quantified self," and, through the discussions that ensued, realized that working with personal data can be a powerful site of engagement with broader socio-technical issues that felt both looming and out of reach to many participants.



daybird (2021) is a p5.js sketch used as an example of an abstract, expressive rendering of my own time-on-task data over 11 weekends (left is the accumulation of Saturdays, and right - Sundays). The bright neon yellow segments draw attention to times of day that are frequently not tracked; and randomness (in position within the days, but also in the width of the brush-strokes) visually confronts assumption of data neutrality and completeness.

The Recipe

This recipe is for both learners and teachers who are unsure how to make critical data practice concepts immediately practical. Working with personal data can lead well to interrogating all aspects of how data is produced and handled, and these can be applied to broader societal issues. This approach also lowers the barrier to entry: it is invigorating to create personally meaningful objects from the start. The output is expressive art that can exist on its own, while the process can scaffold critical technical discourse.

Cookware

1. The basic concepts of information or data visualization.
2. An expressive medium for journaling with data.
3. Principles to practice while working with one's data.
4. Community of meaning-making.

Ingredients

Ingredients listed below come from my own data/art practice and teaching experience, but I hope teachers and learners alike feel free to substitute their own ingredient(s) as they see fit:

1. A set of p5.js sketches with written tutorials that

cover fundamental visualization building blocks, like encodings, filtering, repetition, and interactivity.

2. A living channel that collects examples beyond p5.js, drawing from multi-disciplinary art practice.
3. An initial suggestion and conversation-starter for how the principles of data feminism applies to personal data practice, drawing from Data Feminism (2020) by Catherine D'Ignazio and Lauren F. Klein.
4. In the rest of this document, I offer some reflections on my experiences teaching, learning, and organizing discussions that I hope can spark ideas on how to hold space for confronting complexity and uncertainty collaboratively.

Data Inventory Excercise

Working with your own data plunges you into the thick of difficult human-technology relationships. Tools for self-tracking are entrenched in a neoliberal political rationality that is present in other technologies, too. Deborah Lupton writes in the *Quantified Self* that:

> *...apparatuses of 'soft' rather than 'hard' power...[are not] coercive measures that appear to be imposed from above... People attempt to become productive workers... because they see it as a way toward achieving their optimal selves*

and such practices of self-optimization appear

to emerge from personal desires and voluntary objectives… rather from imperatives issues by the state of other sources of authority.

Although some definitions of "self-tracking" emphasize conscious, deliberate data collection, there is a vast amount of data being collected that we could access, but usually don't; as well as data we have no control over or access to.

One possible approach to self-reflection and group discussion is to create a data inventory.

Steps

1. List as many existing personal data sources as you can (e.g.: Screen Time; Calendar)
2. For each:
    - » What would be an obvious finding from this data?
    - » What would be a surprising finding?
    - » How long does this data need to be collected to be valuable for me?
3. For the whole list:
    - » What data sources are complementary?
    - » What data sources help validate a surprising finding?

Tips

To use this in a group setting, either in teaching or as a discussion topic, introduce the idea early in a session. Then, during discussion, participants

may keep adding things they didn't consider; one outcome from this exercise is a feeling of accumulating awareness. This might itself be a difficult feeling. The above list highlights the benefit to oneself; the discussion can then go on to ask:

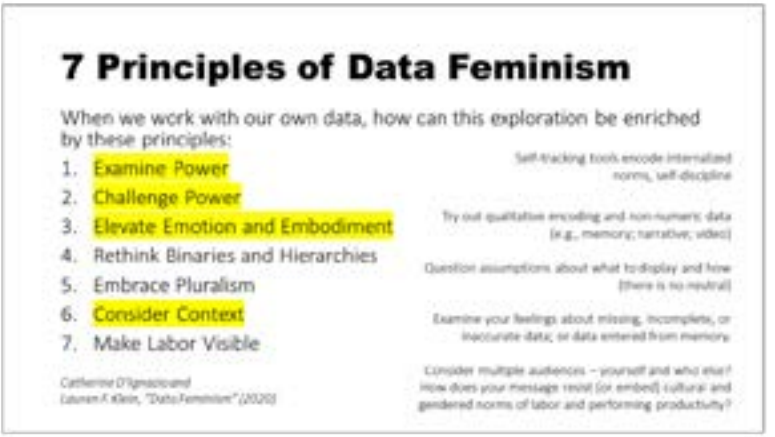
> *What is the cost to individuals? To society? Are there data sources here that are not valuable for us, and what pathways if any are there to modify what data is collected and how? Why does this data exist in the first place?*

Working with any data makes discussion less abstract, including discussing how many consumer technologies often intentionally hide data work from view to create a sense of seamlessness. This can bring intersectional feminism into data practice on a practical level; I use the Data Feminism principles outlined by D'Ignazio and Klein to structure any lecture material.

Colloquial understanding of "the algorithm" on social media suggests a false stability to systems. In *Algorithms of Oppression*, Noble details many examples of search engines being described as neutral or inscrutable; then, after sufficient pressure, being reviewed, found to be biased, and sometimes changed. Critique and revision is possible, so a critical data practice that starts at home doesn't have to stay there.

Sharing with the Community

Community care is essential to a critical data practice, at home and beyond. Expressive personal


7 Principles of Data Feminism
When we work with our own data, how can this exploration be enriched by these principles:
1. Examine Power
2. Challenge Power
3. Elevate Emotion and Embodiment
4. Rethink Binaries and Hierarchies
5. Embrace Pluralism
6. Consider Context
7. Make Labor Visible
Self-tracking tools encode internalized norms, self-discipline
Try out qualitative encoding and non-numeric data (e.g., memory; narrative; video)
Question assumptions about what to display and how (there is no neutral)
Examine your feelings about missing, incomplete, or inaccurate data; or data entered from memory
Consider multiple audiences – yourself and who else? How does your message resist (or embed) cultural and gendered norms of labor and performing productivity?

An example set of “book-end” slides. At the beginning of any presentation (keeping lecture to a minimum) within a course, I highlight all the topics covered I the course already, and then highlight today’s theme. At the end of any talk, I briefly show the list again to remind what we have covered.
I try to always connect the general principle to something concrete, but it may be a different example or question based on the theme of that class. Repetition is a powerful teacher.

7 Principles of Data Feminism

When we work with our own data, how can this exploration be enriched by these principles:

1. Examine Power
2. Challenge Power
3. Elevate Emotion and Embodiment
4. Rethink Binaries and Hierarchies
5. Embrace Pluralism
6. Consider Context
7. Make Labor Visible

Catherine D'Ignazio and Lauren F. Klein, "Data Feminism" (2020)

(1) The invisible labor of data work
New tools can be frustrating
It takes effort to make things reusable

(2) Making invisible work visible
Giorgia Lupi and Kaki King
Bruises: The Data We Don't See (2018)

data practice can be both a playful way to learn data methods, but the moment it enters a social discussion, it has the possibility to be a powerful and fascinating microcosm. The ways in which personal experiences and identities influence our relationship to the world and to technology, and the ways in which those identities intersect, come up in topics of personal data collection, analysis, and interpretation.

This is essential to allow participants to consider:

> *What can I do here that I didn't even realize was possible?*

We are all interfacing with data on a regular basis in different ways. We can use some of this data not only for reflecting on our own lives and bodies, but to practice bringing principles of data feminism into practice, and into a conversation. This can help us develop critical, subversive practices not only as individuals, but as members of our communities.

Further Readings

1. "How to Work and Play with Sleep Data" (2021)
2. "Know thy Flesh: What Multi-disciplinary Contemporary Art Teaches Us about Building Body Knowledge" (2021). Co-authored with Marisa Satsia and presented at xCoAx2021.

p5.js tutorials that cover fundamental visualization such as encodings, filtering, repetition, and interactivity.

Q&A

What is the context or background that inspired your recipe?

Over the past decade, I've kept one foot in art-making, and another in code work. Personally, I experimented with journaling and self-reflection since 2008, bringing art (and sometimes code) into this very personal practice. In 2020, after feedback to some of this artwork, I realized that many people have a difficult relationship to technology (not surprising), and that it was helpful to use self-tracking data visualization to engage with broader socio-technical issues (initially very surprising). For the past 1.5 years, I hosted several workshops,

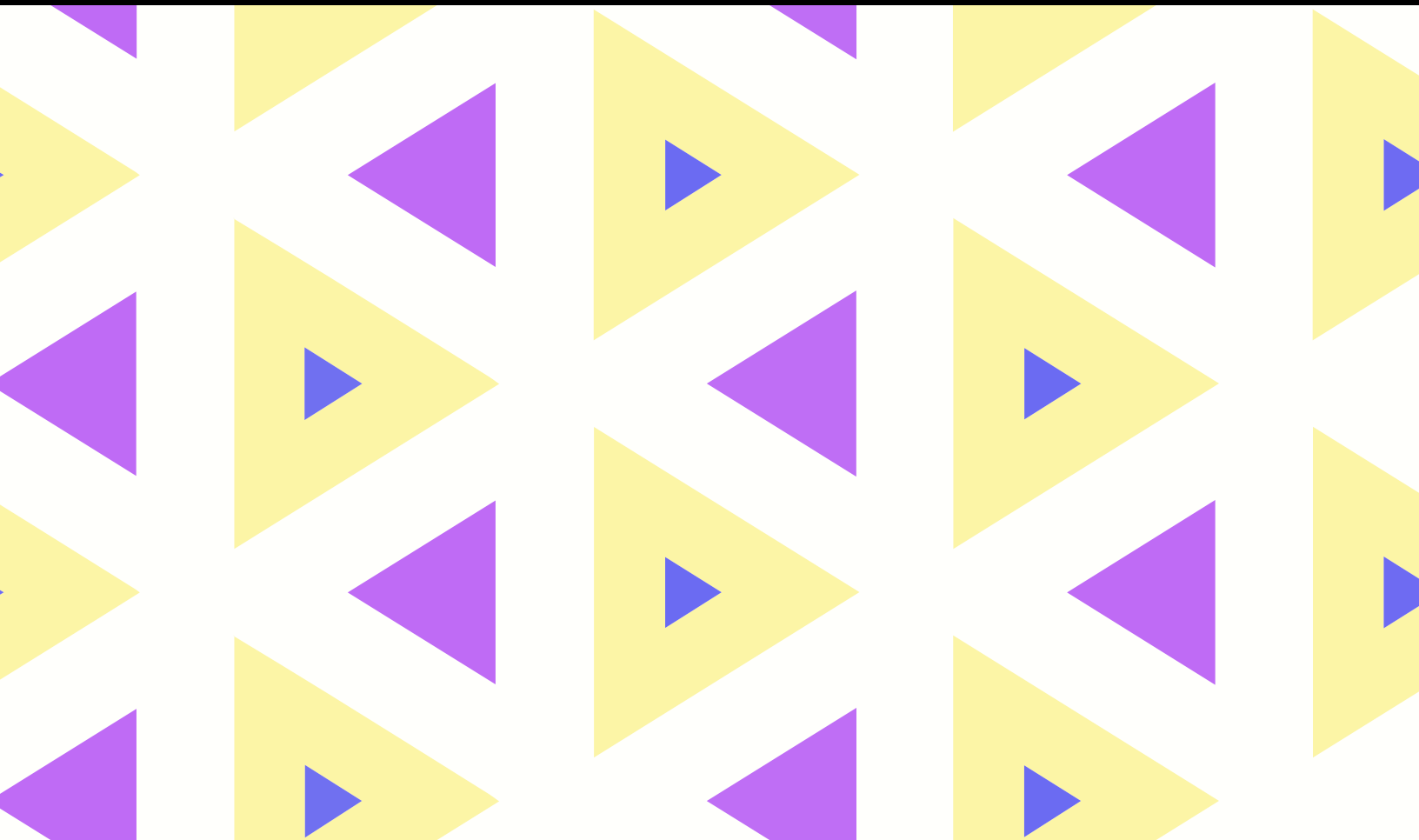
and had dozens of conversations on technology-mediated self-reflection, and this recipe builds on those.

Which community are you offering the recipe to?

This recipe is for everyone with a little bit of interest in working with data as art material; especially people who feel skeptical about collecting data about themselves. I do offer some specific resources. However, my primary goal is to share the idea that something like, for example, making drawings based on your sleep tracker data with a few other people can be a powerful starting point for important discussion of the role of technology in our daily life, and how we want to change it.

How does your submission relate to intersectional feminism?

The lens of intersectionality recognizes how each person's overlapping identities contribute to discrimination or privilege. There are many books on how technology encodes existing discriminatory practices or structures. But the fact that we each use technology in isolation makes this fact often feel theoretical (including often to those who are affected by technological bias). This recipe suggests applying the principles of Data Feminism to data practice, but crucially also proposes "self-tracking" as a group activity. This allows us to see how limited, imperfect, and biased data collection and data tooling can be in a direct way.



Score for Performing User

Lauren Lee McCarthy

#performance #user #interaction

We have been cast as "users" by tech companies, rendered passive and reactive, expected to click "accept" on their terms of service that willfully disregard questions of privacy, ethics, and justice.

But the underestimation of the user is our opportunity to hack, exploit, and subvert this role. We can reject the false premise of a generic hypothetical user. The user has an identity. The user exists within a particular social and cultural context. The user exists.

We can ask: How do the technologies we use choreograph our actions, provoke us to perform, and open spaces for improvisation? What are the user gestures that define new paradigms for interacting with systems?

This is a score for performing user.

The Recipe

User instructions.

Collect a set of instructions, manuals, and/or guides for using various technologies. This might mean a setup guide for your Nest thermostat, steps for creating an account, an advice column about how to use social media, assembly instructions for Ikea furniture, etc.

> *How do you define the terms "technology" and "instructions"? What has informed your definitions?*

User error.

Creatively reinterpret one or more of the instruction sets in a gesture that reveals something about yourself.

> *Who were these instructions created for? What assumptions about the user does the instruction set make?*

Some ideas or starting points:

- Create and perform a new set of instructions inspired by the found set.
- Perform the instructions as stated but not as intended.
- Break the rules.

Ritual user.

Create a program that generates a ritual that you repeat at least once a day for one week. Using any type of recording mechanism, capture part(s) of yourself or your action during each repetition.

> *What effect do you hope this ritual will have? What other rituals do you have in your life, how did they form?*

Misuser.

Creatively misuse an existing API in order to reveal something about the service.

> *What are the risks of misusing a technology? What are the risks of using the technologies you interact with daily?*

User interface.

Create an HPI (human programming interface) that allows others to control some aspect of your life. Run it for one week on yourself.

> *What access are you opening up? What are the vulnerabilities of this system?*

User extension.

Create an extension for someone else that extends their capabilities or experience in some way.

What limitations of experience does your extension assume?

User surveillance.

Hack or surveil someone for the purpose of improving your relationship.

How do you think about consent in this gesture? What kinds of surveillance do you live with daily? What kinds of surveillance does the other person live with daily?

Power user.

Create a system that amplifies some part of you (physical gesture, appearance, emotional state, intention, etc.), and document the use of it.

What effect does amplification have? How does this added power change your relationship to others?

User adapter.

Create a filter or adapter that improves your communication with someone.

How do you define "improved communication"?

User interaction.

Create a device that facilitates an interaction.

> *What unfulfilled desires for interaction do you have? How do the technologies and systems around you prevent or enable you to access these desires?*

The interaction could be:

- Between you and the audience
- Between audience members, or the group as a whole
- Between you and a partner

The device could be:

- A found object you modify or something new you build
- Made with any software, hardware, fabrication materials, or technology, or none at all
- Tangible or intangible
- Static or changing
- Anything as long as you can explain why you consider it a "device"

Q&A

What is the context or background that inspired your recipe?

This score draws on ideas from Performing User,

a course taught at NYU ITP and UCLA DMA, Social Hacking, a course taught in collaboration with Kyle McDonald at NYU ITP, and questions that emerged through the development of p5.js.

Which community are you offering the recipe to?

This score is offered to users of technology, especially those that do not find their values, identities, and needs represented and prioritized in the technologies they regularly encounter.

How does your submission relate to intersectional feminism?

This score provides a series of prompts to interrogate our interactions with technology, and engage our agency in deciding how to participate. It asks each performer to reflect on their own positionality within the technological and social systems they're a part of.

The Gendered Cable Manifesto

Noam Youngrak Son

#genderBinarism #appropriation
#infrastructure

Gender as a concept is not only applicable to humans. When the idea of gender is applied to the cables, its meaning is reduced into a relationship of insertion. As a non-binary individual and designer, I find this problematic in the sense that the way of classifying gender violently erases the existence of everyone that doesn't neatly fit into those categories. However, instead of insisting on abolishing those terms, I discovered that the idea of gender that humans applied to the electric cables functioning in very queer ways that we couldn't expect.

By applying some queer instances of the gendered electric cables back to that of humans, I could come up with a post-human species whose sexual intercourse and reproductive system resembles that of the electric cables. Each of them has multiple genitalia with diverse shapes and textures, which makes this humankind androgynous. Their sexual intercourse happens on a big-group scale involving countless connections of genitals. Genetic information(perhaps contained

in the body fluid as a specific type of polymer) flows along with the connections, like electricity transmitted by cables, eventually forming a network of genetic information.

Offsprings can(but also may not) be made from that network, from a melting pot of genetic information of every participant. I, as a designer, wrote a visual-literal manifesto on this speculative human species, then visualized and materialized their reproductive infrastructure including their sex hotel, sex chair, sex toys. The manifesto is self-published into a book that is bound with electric cables that motivated the creation of this fiction.

The Recipe

USB 3.0 Extension Cable – Male to Female Adapter Cord.
High-Speed Male to Female HDMI Extension Cable.
Straight Female to Female Adapter Cable Premium Stereo Gold-Plated.
Multicoloured Dupont Wire 40pin Male to Female.
40pin Male to Male, 40pin Female to Female.
– Excerpts from product names on Amazon

Female (of parts of machinery, fittings, etc.) manufactured hollow so that a corresponding male part can be inserted. Male (of a fitting or part of machinery) manufactured to fit inside a corresponding female part. – English Oxford Dictionary

Excerpts from the Gendered Cable Manifesto

The full text can be found in the printed version of the Gendered Cable Manifesto, published by Cathair Press.

Gender as a concept is not only applicable to humans. When the idea of gender is applied to the cables, its meaning is reduced into a relationship of insertion. In order to critically reflect on how gender functions in this metaphor, we need to clarify what this signifies. Cables make connections through cable connectors, and the cisgender-heterosexual-intercourse happens by the insertion of genitals. Eventually, the metaphor relates the human bodies with the cables, and the human genitalia with the cable connectors by presuming hetero-cis-normativity.

Though one's gender identity can not be determined solely by if one penetrates or is penetrated, the cable-like classifications are still the only legitimate forms of human existence in the majority of the societies. Genders of cables are the standardized ways for cables

to make connections with each other, and gender binary is a mythical standard that is socially constructed, forcefully applied to individuals. Anyone who doesn't fit neatly in that category might be comparable to the gender-non-conforming ways of connection, such as twisting the wires together. Those queer ways of cable connection are not usually recommended since it is not secure enough and may arouse confusion.

Unfortunately, despite the similarity in the way that gender works in both cases, the mechanism of gender is more restrictive to us as humans than the cables. The genitalia of cables is highly plastic. Yet human genitalia that requires complexed medical procedures to be modified, cable genitals can be switched/converted/split easily by connecting additional components such as cable splitter and gender-converter. Furthermore, gendered cables always have more than one connector/genitalia since cables are designed to carry electric current between multiple ends of cables. Though the individual connection parts can be easily classified as male or female(though you may have to ignore their ambiguity violently), it is most of the time ambiguous to tell the gender of a cable because it has more than one connection parts that are male or female. Most of the people are not allowed to have this obscurity, as it can be seen from non-consensual medical interventions on intersex infants. By using their multiple genitals, gendered cables make multiple connections at once, forming a complexed electric circuit. This, if

done by humans, is also considered illegal or immoral. Unlike the cables, we are restricted in the state and plasticity of genitals that we can have by gender binarism, and also in the number of connections that we can make with it at once by monogamous norms.

Therefore, gendered cables are still deviant from the perspective of gendered people. So why not consider imitating them? By applying this metaphor of gender applied to the cables back to human, I speculate a fictional society where people's gender is functioning like that of cables.

The world of the gendered cables is not Utopian/Dystopian/Egalitarian.

Gendered cables make the connections that may not be predefined, that may be malleable, and always in flux, that may be multidirectional.

Gendered cables make the connections not only for procreation or pleasure.

Gendered cables carry electricity/bodily fluid/genetic information/social hierarchy and structure.

Gendered cables disturb the gender-binary by ambiguating/converting/ splitting/multiplying their genitalia, which may not be binary.

Gendered cables blur the distinction between the bodies, the artefacts, and the architecture. It is ambiguous if they are natural or artificial. It consequently deconstructs the boundary of an individual: where an individual body starts

and ends.

Gendered cables' power relations are formed by the connections that they make: by how many connections it makes, how influential those are.

Gendered cables' power relations can be revealed through the hierarchy of their ability of perception: if it can see the other cables and if it can be seen by the other cables.

Q&A

What is the context or background that inspired your recipe?

The recipe was an attempt to appropriate the binary gendered names that are given to electric cables and construct a queer narrative from it. The modern built environment is crucially reliant on the electric infrastructure, and electric cables serve as the most basic unit of it by forming countless connections with each other. The cis-heteronormative gaze renders these connections into binary gender, male or female depending on if one end of an electric cable penetrates or gets penetrated, violently erasing the existence of everyone that doesn't neatly fit into those categories.

Which community are you offering the recipe to?

I hope this recipe can empower the gender-non-conforming people in tech field. The methodology of queer appropriation that I introduced in this recipe can be applied to not only gendered cables, but also the other politically insensitive uses of word, such as 'Master and Slave bluetooth modules', etc.

How does your submission relate to intersectional feminism?

The premise of this recipe is that gender is not about if your genitals penetrates or gets penerated. Gender is a social construct that emerges from the intersection of various political power-relations.

House of Words

Morgan Green

#variables #signifiers #language #3D

This is an all-level activity that deals with variable declarations and assignments in JavaScript. Variables are one of the most important and powerful building blocks of any coding language. If you are new to coding, variable assignments are a great place to begin. This activity can be done in groups or individually.

Those who are new to coding can simply follow the instructions and learn about variables. Those with more experience can explore the source code and learn more about babylon.js, a wonderful library for creating three-dimensional art with code.

For all participants, regardless of coding level, these instructions should foster reflection on language and the way it operates in culture. This exercise suggests the possibility that no two people speak the same language.

The Recipe

Variables are containers: they can hold a variety of different values. You could imagine a variable as a tea bag, and its value as the kind of tea the bag holds. While the procedure might be the same for different kinds of tea, the flavor will vary depending on the contents of the bag. Wherever a variable appears in code, it deploys the value it contains, much as a teabag releases its flavors when placed in hot water. Variables allow programs to respond to varying stimuli differently, and this is powerful.

This exercise encourages you to think about language, as we use it every day, in the same way. As variables hold different values, and as tea bags hold different flavors — words, too, can evoke different meanings and feelings for different people and at different times.

We'll begin with a warmup that uses basic HTML, CSS, and Javascript, and allows you to get the hang of assigning variables (beginner). Then we'll move on to something more complex with babylon.js in steps 2~4 (intermediate).

Step 1: Mad Libs Warm-up

We'll begin by assigning variable values to populate a Mad Libs.

Even if you've never coded before, you might be familiar with the concept of a variable from

taking algebra in school. In this exercise, variables hold values, just like in algebra; however, these particular variables hold text rather than numbers.

In JavaScript, this is how you declare and assign a text variable, also known as a string:

```
var pet = “cat”;
```

Where the command var signals the declaration of a variable, pet is the name that references that variable, and `“cat”` is the value the variable contains. The quotation marks enclosing the value signal that it is to be read as a text (or string) value. The equals sign (`=`) assigns `“cat”` to `pet`, and the semicolon (`;`) terminates the line of code.

In the syntax we’ll be using, we’ll deploy our string variables using template strings (also known as template literals). For example, this template string would produce the sentence “My cat eats twice a day,” assuming the variable is assigned as above:

```
`My ${pet} eats twice a day.`;
```

We could change the value of the variable pet using the following command

```
pet = “dog”;
```

And then the same code (My `${pet}` eats twice a day.) would produce the phrase, “My dog eats twice a day.” The symbols `${}` signal that the value of the variable with the enclosed name pet should replace that snippet of code. Surrounding the text in

backticks (`) rather than quotes (“) tells the code to look for template strings and substitute them with the appropriate values.

You’ll be assigning two kinds of variables in this exercise: string variables which hold one value each, and arrays, which hold a series of string values. The code will then deploy the variables you’ve assigned using a third kind of variable: the template string.

Another important tool we’ll be using in this exercise is code comments. Code comments are ignored by the computer, so they allow you to explain what your code does in plain language, or to temporarily omit a line of code. In this exercise, there are additional instructions in the code comments for you to follow along.

In Javascript, you can turn text into a comment either by preceding it with `//` (in which case the comment will terminate at the end of the line, or by wrapping it with `/* */` (e.g. `/* comment */`). In the second case, the comment can take up multiple lines. In the code editor for this exercise, comments will most likely appear as gray text, but it depends on your settings.

To complete the warmup, visit my Mad Libs project page on CodeSandbox and read the code comments for detailed instructions. This should give you an idea of how text variables can operate within a program.

Step 2: House of Words

In this step, rather than randomly selecting

nouns, adjectives, etc. as with the Mad Libs, you'll be thinking about what a certain set of words means to you. Whether you are a seasoned coder or brand new, take some time to notice how the language you choose affects the experience.

The words you choose in this exercise will have a lot of power. Read on to see it all unfold! Visit the House of Words code example on CodeSandbox and carefully follow the instructions in the code comments. Note the instructions on how to save your work at the bottom.

Step 3: Build Your Own Room

If you would like, you can build a room of your own, like one of the rooms in Step 2.

You have the option to write your own template string for others to populate (Option 2). Or you can just write your own small poem and fill the room with it (Option 1).

If you don't want to use template strings, or you feel you understand them, go ahead and proceed to the Build Your Own Room code example on CodeSandbox. Further instructions await you there. Note that instructions continue after you finish writing text.

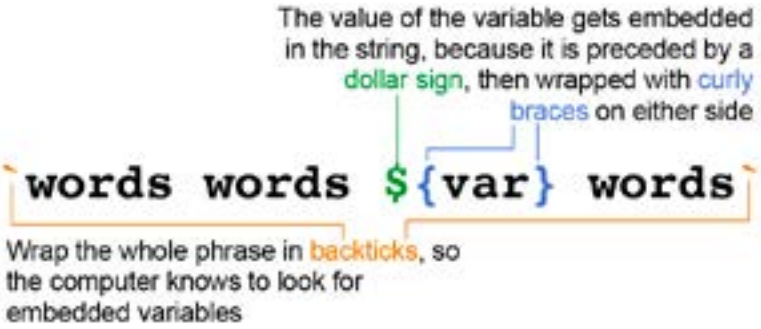
Optional Challenge

Read on for more use cases and an explanation of template strings.

Consider again this example, in which pet is assigned as a simple string variable, and sentence is assigned as a template string:

```
var pet = “cat”;
var sentence = `My ${pet} eats twice a day.`;
//the above line assigns the variable called ‘sentence’ the value “My cat eats twice a day.”
```

Three important symbols are colored for emphasis. The backticks `` ` ` `` that establish the variable as a template string, and the dollar sign `$` and curly braces `{}` that surround the variable, allowing it to embed into the template string.


The value of the variable gets embedded in the string, because it is preceded by a dollar sign, then wrapped with curly braces on either side
`words words ${var} words`
Wrap the whole phrase in backticks, so the computer knows to look for embedded variables

A diagram explaining the syntax for template strings in computer programming. Image credit: Morgan Green.

This formatting allows the code interpreter to sub in any string value where ${pet} appears in the sentence. So if you change the value of pet, the sentence changes accordingly:

```
var pet = “dog”;
var sentence = `My ${pet} eats twice a day.`;
//the above line assigns the variable called ‘sentence’ the value “My dog eats twice a day.”

var pet = “toaster”;
var sentence = `My ${pet} eats twice a day.`;
//the above line assigns the variable called ‘sentence’ the value “My toaster eats twice a day.”
```

Here’s a different example:

```
var fav_color = “purple”;
var phrase = `My favorite color is ${fav_color}.`;
//the above line assigns the variable called ‘phrase’ the value “My favorite color is purple.”
```

Note that our variable names don’t really make a difference to the code interpreter. We could get the same results with the following:

```
var variable_1 = “purple”;
var variable_2 = `My favorite color is ${variable_1}.`;
//the above line assigns the variable called ‘variable_2’ the value “My favorite color is purple.”
```

… But we can make things clearer for ourselves by giving our variables names that have meaning for us.

You can build your own room by visiting the Build Your Own Room code example on CodeSandbox. You can also look at the code from the first two steps to see more examples in action.

Follow the instructions under option 2 in the comments. They will help you to create your own template string sentence and fill the room with it. After you've written your sentence, you can continue to read the comments to make additional changes to the room.

If you get stuck…

Your first line of defense might be to click the "Console" button, underneath the code editor. This is likely to point you in the right direction.

Note that the code interpreter is very different from a human brain in the following respect: it cannot understand something that is almost the type of input it expects to hear. Human brains have amazing capacity for interpolation. For example, we can interpret a few dots and lines as a smiling face :-) . While computer scientists are working on computers' interpolative abilities, they do not come standard. So while a human who expects to see pet could easily interpret Pet as the same thing, the computer has no ability to recognize these two words as essentially the same. If it expects to see pet, it will not recognize Pet.

Which is just to say, if you are stuck, take a careful look at the examples and the code from steps 1 and 2. See if you can match the format. One misplaced symbol can make all the difference. Once you get used to this kind of careful looking, coding starts to become easier. Persistence is at least as important to effective coding as brain power and logical thinking.

Step 4: Share and Discuss

If you are working in a group, share each other's houses from step 2. Spend some time with them. Note the differences and similarities in the words that populate the houses in step 2, and consider the questions below.

If you are working individually, you can check out some other peoples' houses on the City of Words project page and consider the questions that way.

Discussion Questions

1. What are some of the differences and similarities in the way that you've defined different words?
2. Are these differences surprising? Do they tell you anything about what it might be like to occupy a different point of view, to walk in someone else's shoes?
3. How does contextualizing what you've written (in longer sentences, in the space of a house) affect its meaning? How does it affect the way it

feels?

If you've completed step 3, have someone populate the variables for your room (or trade with your group members). Talk about what happens.

Close by discussing or considering how you feel after this exercise, and what observations you might take with you now that you've completed it.

Would you like your work from this exercise to appear publicly so that others can experience it? If you would like to share any of what you've made, you can save it by following the instructions in the code comments.

Submission

You are welcome to submit your link for public sharing using the House of Words Google Form. Feel free to submit anonymously, alternatively you can include your name. Submissions will be lightly moderated. If approved, your links will be added to the City of Words project page.

Q&A

What is the context or background that inspired your recipe?

Most of the artwork I've exhibited for the last few years uses software I've coded to process language. I'm interested in how software can move words around quickly. Computational efficiency allows me to simulate the breakdown of language at incredible speeds. This exercise allows others to participate in this practice with me. Moving through the "house of words," the program I've created reorients people to whatever they've written. Hopefully these literal shifts in perspective will help users to consider their choice of words in a different way, and also to consider the experiences of others. This project proposes that no two people speak the same language.

Which community are you offering the recipe to?

This is an all-level activity for anyone with curiosity about language and control. For those who are brand new to coding, it's also a great way to get your feet wet with some variable declarations. For anyone, regardless of coding experience, it's a chance to look at the way you use language from a new perspective. It's also a good starting place for anyone who is curious about coding 3D imagery with JavaScript, as most of the exercise is written in Babylon.js, a fun and powerful 3D library.

How does your submission relate to intersectional feminism?

Language is an important tool for maintaining systems of power; it can also be a tool to help alter those systems. In this exercise, I ask people

to define words that likely trigger different connotations for different people. Once people have defined the words, they will find themselves confronted with their own definitions. I am hoping this staged confrontation with language will help people better understand how it operates. I hope this kind of work can help people to use language in a way that challenges intersecting supremacies (white, male, cis, straight etc.), rather than upholding them.

Recipe for Erotic Event Listeners 🌹

Kathy Wu

#lovePoems #digitalPoetics #browser

Erotic Event Listeners offers a web template for building a love poem focused on opacity/transparency, and click/touch interactions. The recipe is inspired by writers Audre Lorde and adrienne maree brown; within capitalist regimes, the erotic is a way intersectionally-oppressed individuals might access healing and power.

This recipe is aimed at people who are just starting out their understanding with "how the browser is built." Let's pretend for a moment that the cursor is my hand, or body, seemingly immaterial, floating. Can a hover state be a gaze, or a click be a caress?

The Recipe

This recipe is inspired by a tradition of

computational and digital poetry, as well as by feminist writers who write about love, pleasure, and healing.

In the Uses of the Erotic, Audre Lorde writes:

> *When I speak of the erotic, then, I speak of it as an assertion of the lifeforce of women; of that creative energy empowered, the knowledge and use of which we are now reclaiming in our language, our history, our dancing, our loving, our work, our lives.*

In adrienne maree brown's book Pleasure Activism, brown encourages ways that a pleasure practice can be healing:

> *I touch my own skin, and it tells me that before there was any harm, there was miracle.*

Within capitalist regimes we are told we feel love and pleasure in the wrong ways, and the systems prefer everything to be subjected to economies of scarcity. Particularly individuals of intersectionally oppressed-identities aren't seen as belonging with the idea of pleasure at all—doing it in the wrong ways, ways which are stigmatized and also criminalized.

And of course there's all the ways in which the act of writing about love — especially romantic and erotic love — is also seen as an inferior genre to other kinds of writing because of the way these things are gendered.

Within the traditions of material and concrete

Image credits: Auriea Harvey and Michaël Samyn.

poetics, we might gently resist what this web space might be for. For instance, here's an example of digital love letters from 1999, which plays with how the cursor dances across skin:

We can play with the browser space as a world of play, poetry, and pleasure even. As users of computational machines we spend minutes if not hours of everyday clicking, swiping, touching the body of a webpage. Let's pretend for a moment that the cursor is my hand, or body, seemingly immaterial, floating. Can a hover state be a gaze, or a click be a caress?

Writing about love can often invite a kind of discretion, secrecy, for a number of different reasons — think pillow books, innuendos. This recipe is also inspired by modes of secret writing. In the browser, to be literally transparent means to hide away. To be opaque in our expression, means to show all. You might also play with visibility, legibility.

Who is it for? This recipe is a simple and humble one. It's aimed at people who are just starting out their understanding with "how the browser is built," that offers a playful way to think about "touch" and "click" and toggling the appearance of a DOM element. Making websites from scratch too, can be a radical act of moving away from the nonconsensual transactions, constraints, and terms of service set out by today's software empires.

Here is the basic example:

animated gif of a user interacting with the digital love poem demo. the top of the window instructs “move your hand over my body.” a cursor hovers over an image of a pink rose in a garden, slowly revealing hidden white cursive text such as “enter again,” “suck a tenderness.”

Image credit: Kathy Wu.

Instructions

1. Write a love poem:
    - » If it's easier, write it not as a poem, but as a list.
    - » If you'd like structure, consider traditional poetry formats, e.g. 14 lines in the rough structure of a sonnet. Or 5 lines for a haiku.
    - » Perhaps it's someone you fancy, with whom you want to be discreet. Perhaps this poem is dedicated to yourself, or a part of the body.
    - » What do you love about this part of the body?
    - » You can think about erotic love, and think about verbs that you would like to include. You can stay within a realm of romantic, platonic, or other kinds of love. Whatever is more comfortable.
    - » Maybe you start every line with a different verb ["touch," "taste", "stroke"]. Maybe you start every line with the word "you…"
    - » For net-based written inspiration, consider Craigslist Missed Connections (go with discretion…) or erotic Fan Fiction sites…
2. Download the Covert Poem template.zip and unzip it.
3. In the code:
    - » The template.zip should include "index.css," "index.html," "script.js." Open all three files in a text editor of your choice.
    - » Beginning in script.js: On line 1, after the equal sign `"let desires = …"`, replace the data with your own poem. Think about if you want to split it up on every line break, or on every word…

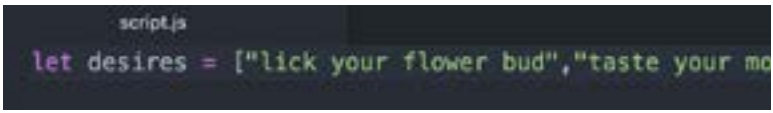


Image credit: Kathy Wu.

- On line 16: If you would like, you can change the event listener "click" to other kinds of events. mouseover, mousedown… here is a full list of all event listeners: HTML DOM Event Object Reference.
- In index.html: On line 15, between the <h1> brackets, replace the title of the poem with your own. What instructions might you give to someone reading this poem?

LOVE POEM

Speak earth and bless me
with what is richest
make sky flow honey out of my hips
rigid as mountains
spread over a valley
carved out by the mouth of rain

And I knew when I entered her I was
high wind in her forest's hollow
fingers whispering sound
honey flowed from the split cut
impaled on a lance of tongues
on the tips of her breasts on her navel
and my breath howling into her entrances
through lungs of pain.

Greedy as herring-gulls
or a child
I swing out over the earth
over and over again.

Credit: Love Poem by Audre Lorde.

» In index.css: On line 3, change the background image to be the name of your own image file. Maybe it's something that reminds you about the person/idea you are writing to, or maybe it's something completely random and meant to disguise the website from your intended audience.

This is meant to be a starting point, but perhaps you want to play with other structures entirely. Here is a love poem builder if you want to learn about other kinds of interactivity.

Q&A

What is the context or background that inspired your recipe?

The recipe is inspired by writers Audre Lorde and adrienne maree brown; within capitalist regimes, the erotic is a way intersectionally oppressed individuals might access healing and power.

Which community are you offering the recipe to?

This recipe is aimed at people who are just starting out their understanding with "how the browser is built." People who would like the internet to look and feel differently and want to

Image source: Women in Concrete Poetry: 1959-1979 book cover.

you

you

you

and

and

and

me

me

me

take

try

turn

wear

wait

wake

move

make

mend

sigh

speak

see

play with the grain of the web, but don't yet know how.

How does your submission relate to intersectional feminism?

Within capitalism and heteronormative patriarchy we are told we feel love and pleasure in the wrong ways. People of intersectionally-oppressed identities are stigmatized, criminalized, and aren't seen as belonging with the idea of pleasure at all. This web project is inspired by the writings of Lorde and brown to encourage freer spaces on the internet that we build ourselves, through practices of alternative website development and erotic poetry.

Image credit: Kathy Wu.

How to contribute to open source software by sharing uncertainty

evelyn masso

#opensSource #collectiveLearning #feedback

This is a recipe for teaching new coders how to contribute with open source projects. It also serves as a practice for validating feelings of uncertainty that learners often have and shows them how these feelings can be fertile ground for improvements to the open source project and prompting larger conversations amongst other community members of the project.

In open source projects there is often a power dynamic between maintainers and newcomers where maintainers decide what is important and newcomers obey. Open source doesn't have to be like this. As someone who helps maintain p5.js, I learn from newcomers often! Newcomers are experts on how easy it is to learn a tool and often have other unique and valuable perspectives to share.

This recipe was adapted from an assignment

I created for the p5.js Approachability Lab, which took place in 2019 at UCLA under the advisement of Lauren Lee McCarthy and was based on prior workshops I facilitated with Write/Speak/Code around 2016. In both contexts, all participants were women or non-binary individuals. Based on the Open Source Survey (2017) conducted by Github, open source maintainers are predominantly white cis men, this activity was also created to specifically validate and empower the voices of women and people of other marginalized genders in public spaces where software is made.

This recipe is an offering to all beginners, newcomers, and first-timers. You have valuable insights to offer. We can all learn and work together.

The Recipe

This recipe is inspired by a tradition of computational and digital poetry, as well as by feminist writers who write about love, pleasure, and healing.

A Note on the Recipe

This is designed as an add-on for another coding-based activity because it hinges on the participants having direct experience learning how

to use at least a couple parts of the library.

I've written this recipe for p5.js because that is the open source library I use in my teaching, but this can be adapted for any open source creative coding tool that has a publicly accessible forum for feedback. This could also work with UI-based tools like Wick Editor.

Activity Prompt

Think back to the last project you made with p5.js. What was confusing about the commands you used? Did you encounter any bugs? What would have made it easier? For this assignment, you will document one of these moments and share it in the p5.js GitHub repository. Please include one idea for how you might change the commands, behaviors, or documentation to help future learners.

Your suggestion can be a small change or a large one, and it's okay if you don't know how to make it yourself. The feedback and ideas you have are valuable input for the continued development of p5.js.

Please share your submission with your facilitator before posting it to the p5.js GitHub repository.

Format

The issue templates for p5.js are meant to provide a guiding structure to share feedback about the library. You can use those to structure your submission. Here are some things to include:

- what they were trying to accomplish
- what you expected to happen that didn't or what was missing that would have been helpful
- screenshots or animated GIFs to help illustrate are very helpful.

Submitting

Navigate to the p5.js GitHub issue creation page and submit your issue. If you don't have a GitHub account, you will need to sign up for one.

What to Expect Next

It is likely you will get questions or comments on your issue, either from the maintainers or other community members. You should respond to these in a timely manner (think of it like email), but remember that it's okay to say you don't know or ask clarifying questions before sharing more information.

For the Facilitator

A few notes on what I usually do as a facilitator for this activity.

Submission Feedback

I will have participants share their submission with me before they post it on GitHub, primarily so I can reassure them that their idea is valid and worth sharing. I sometimes offer feedback on how they might communicate their ideas more clearly, or of

other issues I've seen related to theirs.

After Submission are Made

Once students have submitted their issues, I will occasionally check in on their issues to see how the conversation is going. If I see miscommunication in the conversation, I will comment to try and clarify from my own point of view. I usually don't publicly weigh in on whether the idea is "good" or not because I think it's important for them to get feedback (and validation) from the wider community at this point.

Q&A

++

What is the context or background that inspired your recipe?

This recipe was inspired from workshops about contributing to open source I have facilitated at UCLA and Write/Speak/Code LA. These workshops were attended by almost exclusively people of marginalized genders. This was one of the key reasons I taught these workshops in the first place, to encourage more women, non-binary, and gender nonconforming folks to have access to open source.

Which community are you offering the recipe to?

This recipe is an offering to all newcomers and

beginners in open source, but especially people whose skills are undervalued because of their gender.

How does your submission relate to intersectional feminism?

My submission describes a practice of challenging hierarchies between project maintainers and newcomers in open source by empowering and valuing the knowledge of newcomers. More established project maintainers are by and large people who also hold structural power and privilege, so newcomers and beginners who aren't able bodied cis white men are almost always dealing with structural power dynamics while learning how to get involved in open source.

The Console Log and Ways of Being

Dorothy R. Santos

#experimentalProse #docu-poetics #creativeCode

The title of the exercise, The Console Log and Ways of Being, was inspired by Bay Area-based artist Elizabeth Travelslight. Over the 2021 summer, I facilitated a Yerba Buena Center for the Arts (YBCA) Community Conversation. I posed the question to the group* about the creation of new tools for the future. Travelslight suggested that tools be replaced with "ways of being" since the idea of tools felt reductive and prescriptive. As an homage to this important dialogue, this recipe suggests creating and writing new ways of being with code that upend the need for finite, productive, and useful outcomes. It entails thoughtful reflection and intention with the objective to go beyond a line of code and its functions towards revealing how the artist/creative coder implicates themselves in the execution of the code for another human being. This recipe seeks to have the student understand the relationship between themselves, the code, and the person who will experience the after effects of the code they write. For non-coders or beginning coders, it will allow a look into the way code works and expand one's relationship

with how code operates beyond the console, the device, or machine.

The Recipe

The objective of this assignment encourages the student or participant to engage in experimental prose or poetry that facilitate writing about code, functions, variables, and other key terms found in coding and programming to form a relationship with the concepts. The ideal participant for this exercise is geared for beginning coders that learn best through drawing upon connections and concepts in preparation for understanding technical aspects of code. However, advanced coders are encouraged to engage in this exercise as a way of thinking about various aspects of code through creating and envisioning new meanings and, perhaps, a more accessible and inclusive language and/or project.

As someone who best understands technical terms and concepts through storytelling and seeks to the *whys and hows* of code, I offer this recipe to students and artists that need a creative intervention that allows them to draw throughways between the code and how they might use it. I want educators stepping into teaching code within their classrooms an alternate pedagogical approach that allows both students and educators to be in dialogue about coding terms and functions to see the various ways code is understood, perceived, and learned because every student learns in a different way. As a young student, I was often told

that I did not have the aptitude for mathematics, engineering, and the "hard" sciences.

This contribution is dedicated to young QTBIPOC, immigrant, and disabled artists, makers, students, and educators delving into a new-found relationship with code and desire to envision and center their aspirations and dreams of what code can and ought to be! I wanted to conclude with the literary inspirations for this recipe. The Shell Game edited by Kim Adrian and Lillian-Yvonne Bertram's book Travesty Generator were instrumental in understanding how creative writing has a much deserved place in creative coding and the world of programming. Both texts have been influential in my own pedagogical approaches to teaching creative writing and have enlightened me on the impact of learning code by connecting functions to my lived experiences and understanding code through the modality of storytelling, experimental prose, and docu-poetics. In particular, the poem #miscarriage.exe by Ingrid Jendrzejewski takes the appearance of code through typography and format yet creates a textual trompe l'oeil by giving her reader the appearance of code. Bertram's Travesty Generator is an extraordinary literary text that shows how race, gender, and class (re)generate historical, cultural, and societal patterns through computational means.

Steps

1. First, an educator or facilitator of the exercise leads a group of students or participants by first looking at a specific programming language of choice. p5.js is a great place to start!

2. Second, have each student select a library they would like to work with based on their related interests. For instance, p5.sound expands the web functionality of audio input, playback, etc.
3. Third, the student will select between 5-10 functions within their library of choice and create experimental prose or poetry based on selection. For example, a student might be interested in how the sound of a piece of music changes over time, therefore, they might choose p5.Envelope and its respective functions. Based on the descriptions provided for each chosen function, they might create a description of a song they love or might have created using the code itself to understand the connection between the code, intention, and output.

The Console Log and Ways of Being suggests to students, educators, and artists using code that poetic gestures may result in understanding one's purpose and reason for learning code and how they might take part in the creation of new ways of being with code as a language for expression of social change and intersectional feminist practice and praxis.

Note: Participants of 2021 YBCA Community Conversation include Adrian Jones, Lauren Lee McCarthy, Joanne Rondilla, Ph.D., Elizabeth Travelslight and Xiaowei R. Wang. Facilitated by Dorothy R. Santos

Further Readings

» Adrian, Kim, ed. The Shell Game: Writers Play

With Borrowed Forms. Lincoln: University of Nebraska Press, 2016.

» Bertram, Lillian-Yvonne. Travesty Generator. Blacksburg: Noemi Press, 2019.

» Costanza-Chock, Sasha. Design Justice: Community-Led Practices to Build the Worlds We Need (Information Policy). The MIT Press, 2020.

» The Black School. The Process Deck. 2018. Paper, 2 3⁄4" x 4 3⁄4". New York, United States.

» Transfeminist Technologies, Coding Rights, and Design Justice Network. The Oracle for Transfeminist Technologies. 2020. Paper, 2 3⁄4" x 4 3⁄4". Brazil and the United States.

Q&A

What is the context or background that inspired your recipe?

The development and creation of The Console Log and Ways of Being exercise stems from several sources of inspiration. From reading the book 10 PRINT, which is about the cultural relevance of one line of BASIC programming language for the Commodore 64 to learning how to code for the first time, this recipe was written to examine why certain lines of code are named the way they are. I wanted to create an exercise that has helped me learn lines of code when I was developing a text generator as one of my first projects using code as a medium.

Which community are you offering the recipe to?

I offer this recipe to artists, poets, writers, and educators with a strong desire to incorporate creative writing strategies to help expand and understand how code might be subverted and flipped. It is an offering to create something that expands and stretches the imagination into crafting and coding a different way of writing, both written text and code. The recipe is an alternate path for learning code in a much more holistic way that allows spaciousness for dialogue.

How does your submission relate to intersectional feminism?

The Console Log and Ways of Being exercise is meant to draw in from the practices of feminist media histories, electronic literature, computational media, tech, race, and ethics. This work is meant to be world building in its scope and encourage intervention into technological spaces oftentimes devoid of ethics. It's meant to slow down the acceleration and proliferation of tools for the sake of techno solutionism. It is meant to be a meditation of words, speech, utterances, and spoken language not included in the code in the hopes of creating a new codex for future generations of artists, writers, and educators teaching and engaging in creative code as a medium.

terra firma

Sara Rivera

#feudalism #women #struggle

An in-progress, collaborative, and free database of select texts on women, land, and resistance. The database does not attempt to be complete nor should it ever be concluded. It will, like a garden, exist as an evolving and expanding pedagogic tool that place and realize women who till land as figures of historic possibility.

The Recipe

To this day, the Philippines remains to be a semi-colonial and semi-feudal country.

Monopoly Capitalism imposed on domestic feudalism transformed the 19th-century backward mode of production to what is now 20th-century semi-feudalism, characterized by landlessness, feudal extortion, wage slavery, outmoded agricultural technology, threats of displacement by corporate land grabbers, and militarization of the countryside.

Currently, nine out of ten Filipino farmers remain landless or have insufficient land to till.

Marx writes: Landed property presupposes certain persons enjoy the monopoly of disposing of particular portions of the globe as exclusive spheres of their private will to the exclusion of all others.

Toll access systems from the age of print, inherited by the digital era now with new faces—subscriptions and paywalls—have deprived the general public of valuable information. Historically, shadow libraries and public archives have been radical ways of allowing access to resources and tools towards relevant research and knowledge building that welcomes the participation of a larger population.

Nationalist, scientific, and mass-oriented education struggles to compete with rampant disinformation and further neoliberaliza-

tion of educational institutions.

Cultural workers grow inspired from the ways that the peasantry have shown imaginative ways of resistance, underlining the possibility of a new social order that empowers everyone and equips everyone to express the collective aspirations of the people.

As knowledge workers we recognize the peasantry as a principal part of knowledge building, knowledge they theorized from their material reality and methods of organizing.

Access to democratic spaces to express and organize is futile, made more scant by enduring State repression that fatally pushes back on resistance of any form. One can trace the agrarian question with a thread through the history of capitalism. Capitalism reiterates and reaffirms the violence of deprivation—it is to deprive farmers of land, workers of a livable wage, people of knowledge, and the capacity to imagine one's freedom from deprivation.

The soil holds memory. The soil remembers the laborious act of tilling and caring, and the struggles it consequently witnessed.

Words that you can say about both land and archives:

to keep
to hold

	A	B	C	D	E	F
	No.	Year	Title	Author	Publisher	Region
	No. 15	1979	Constraints to Rural Women's Participation in Philippine Development: A Report from the Field	Jeanne France I. Illo	Ateneo de Manila University	Philippines (Asia)
	No. 37	1985	Revolution Postponed: Women in Contemporary China	Margery Wolf	Stanford University Press	China (Asia)
	No. 18	1988	Women in the Soviet Countryside: Women's Roles in Rural Development in the Soviet Union	Susan Bridger	Cambridge University Press	Russia (Europe)

Screen capture from the in progress-open source index. Image credit: Sara Rivera.

to tend

to look after

Exploring archiving as a practice in caring, remembering as theorizing, and knowledge as a garden we tend together.

Q&A

What is the context or background that inspired your recipe?

I am an anti-imperialist peasant rights advocate from the Philippines involved in grassroots organizations that seek to advance the agenda for genuine land reform, rural development, and food security in the Philippines. My individual practice focuses on examining memory and hegemony towards imagining possible futures and ecologies of action. I wish to explore archiving as a practice in caring, remembering as theorizing, and knowledge as a garden we tend together.

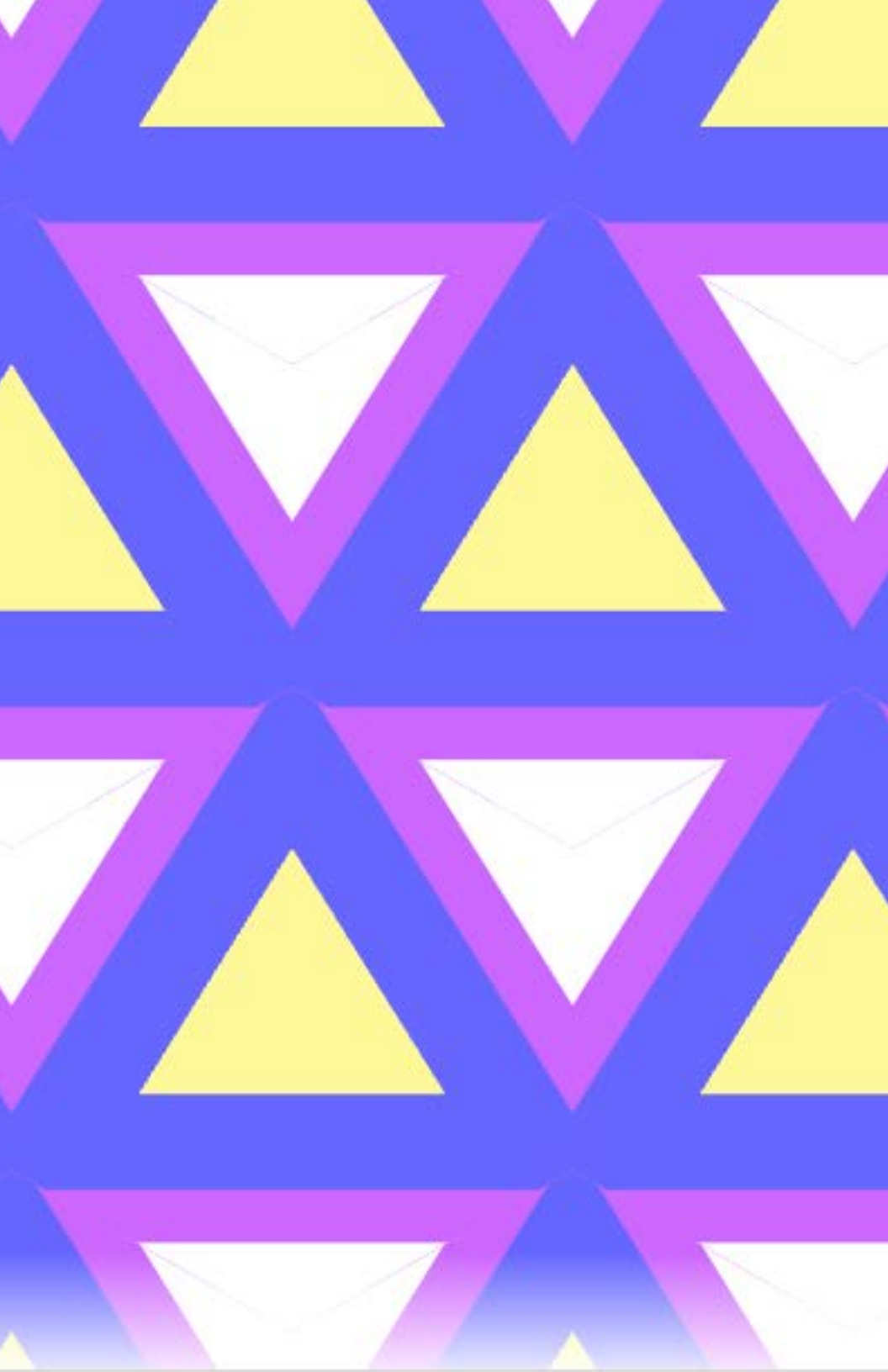
Which community are you offering the recipe to?

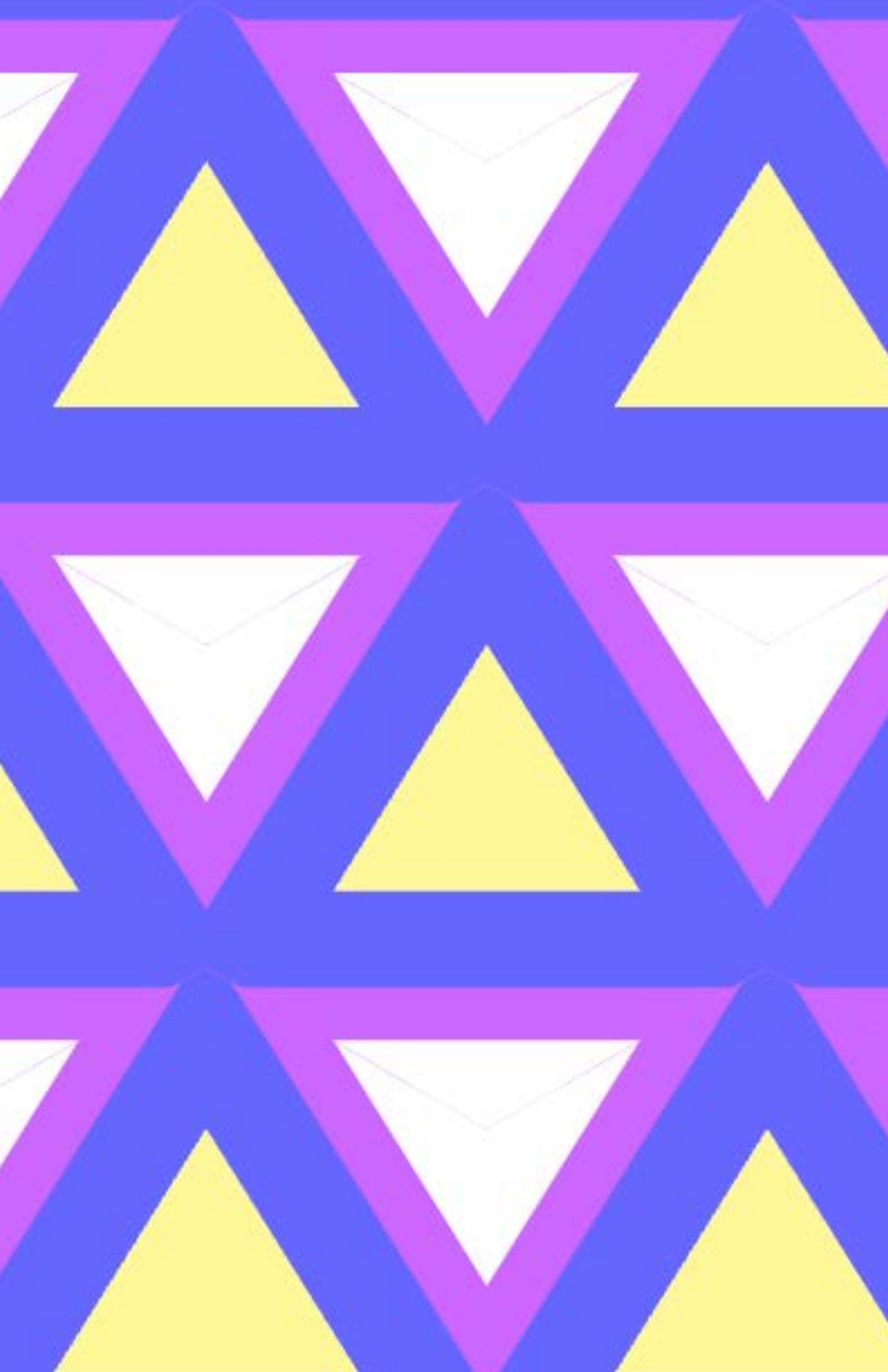
Community organizers that participate in agricultural research, mass base building in rural communities, environmental campaigns, and women-centered histories and struggle. Terra firma is an expanding collection of texts on women, land, and resistance that examines and underlines the roles that rural women, in the struggle for land and life, have played across history to instruct the

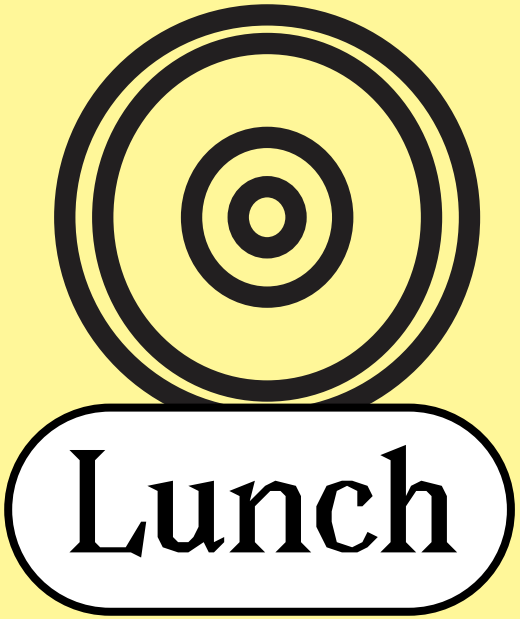
people of today towards a planetary and mass-oriented network of world-building.

How does your submission relate to intersectional feminism?

This recipe is a proposal for cultural workers who engage in the production of knowledge in bourgeois spaces to learn from rural women. Terra firma is a knowledge-sharing tool and network that seeks to advance the struggle for agrarian reform in countries around the world by forwarding narratives, methods, and forms of anti-imperialist and anti-capitalist theorizing by or about peasant women. It is in this learning that we begin to forge comradeship between women who struggle together.







A School for Vernacular Algorithms, Tegan Bristow / Kolam in Code, Lavannya Suressh / Jingle Tales, Shafali J, Micah A, Sanketh K / Esolangs: Deprogramming the Language Divide, Echo Theohar / Cultural Access Memory (CAM), Kevin Lee / Black Radical Translation, Shayna Robinson / Secure Your Home IoT with the CryptoCrochetKey, Anuradha Reddy / *Annotating a Feminist Internet (AtFI)*, Nancy Mauro-Flude sister0.tv

Intersectional Feminist Approaches to Teaching and Learning

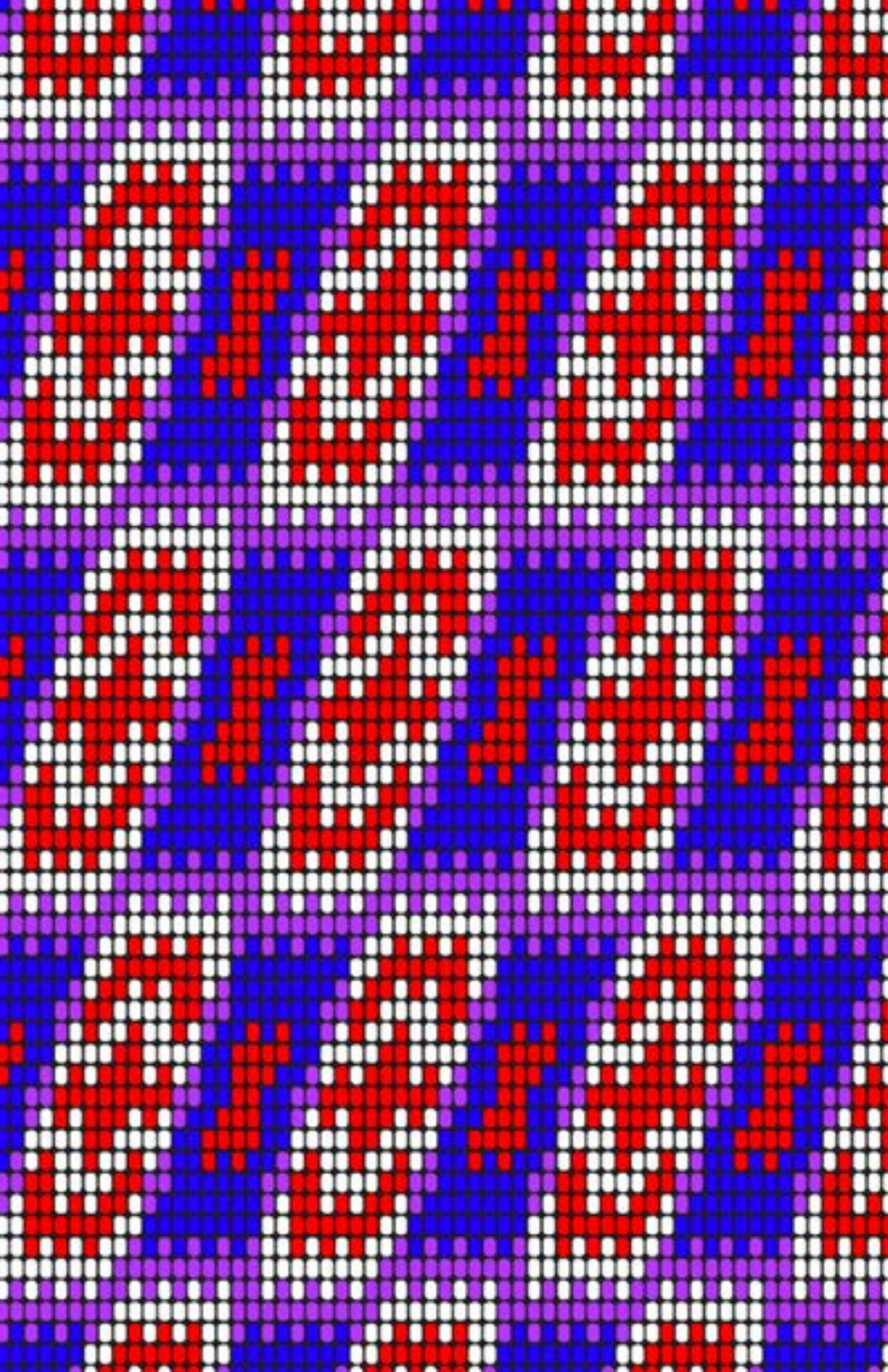
A School for Vernacular Algorithms

Tegan Bristow

#vernacular #african
#communityKnowledge

In an investigation that started in 2018 and led by questions I had on the colonial disenfranchisement of pre-colonial African cultural led techne-cultures, the projects of a 'Vocabulary for Vernacular Algorithms' and 'School for Vernacular Algorithms' were born (2018 - today). The entire project in its various public facing and collaborative forms is an interrogation of algorithmic thinking, using 'Vernacular Algorithms' firstly as a lens through which to explore the lack of egalitarianism and aesthetic centric techne cultures in contemporary algorithmic systems. And secondly to develop a curriculum for learning math, code and algorithmic thinking through indigenous and vernacular African art forms such as beadwork, basketry and song.

Output screenshot from Interactive Video Installation (3 x 5 m interactive projection built with Processing and Kinect) at the School for Vernacular Algorithms. Image credit: Tegan Bristow.



The project asks philosophical and practical questions to egalitarian 'systems thinking' in traditional African cultural practices. Asking how vernacular algorithmic thinking can be used to unpack and critique contemporary computing and the algorithmic organization of society; which has come to dominate not only our digital but lived experiences.

One side of the outcomes are a practical focus on what can be learned from African beadwork, palm / grass weaving, and lyrical practices in Southern Africa from a mathematical and algorithmic perspective. While the other side simultaneously and very importantly questioning how egalitarian techne cultures engage: logic, math, lived experience, history, environmental and cultural contexts into a single system.

The Recipe

Recipes are a journey and this one starts in the cool and darkened storerooms of the Wits Art Museum in Johannesburg, South Africa. Here and on this day in 2018 (with the boiling weather in the streets of Johannesburg beyond the museum walls) stood three disparate groups: game art students, information engineering students and African art curators.

I had brought these three together into this

room to specifically look at the museums collection through the lens of pre-colonial technology culture and to interrogate the collection through the lens of fractal mathematics, in response to African Fractals: Modern Computing and Indeginous Design by Ron Eglash.

A Place To Start

This day in the cooled museum stores started what was for me and many others to come, a philosophical and critical enquiry that aimed to:

- Decolonise the notion that technical knowledges are only Western.
- Understand (and just the surface here) of the fascinating relationship between technical and cultural knowledges in Africa.
- Bring this knowledge into contemporary African computing and digital practices and thereby an intergenerational link in math, code and culture in Africa.
- Build confidence in young African learners on the relevance of their cultures and the knowledge that surround them in a technology oriented society.

Breathing Life into Art Histories and Culturally Embedded Techne Histories

In groups, students were set loose to find amongst the thousands of artworks and cultural

Beadwork made and worn by Philiswe Dube, 2021 School of Vernacular Algorithms. Image credit: Tegan Bristow. Photo credit: Zivanai Matangi.

objects works that showed fractal mathematical systems referred to by Eglash:

- Scaling.
- Recursion.
- Complexity.
- Numeric Systems.
- Geometric Algorithms.

With these they wrote new views that actively showed previously unwritten links between the mathematical system and cultural histories of each. These included a woven Baluba (Cameron) food basket that shifted geometrically from a square to a circle to a triangle. A beautiful example of geometric algorithms which in Luba culture reflected the complex personal shifts and growth in a person through time. Another, the Thevele Medicinal Horn of the VhaVenda (Southern Africa), a horned container beaded with a blue and green logarithmic spiral indicating the extensive use of 'infinity' that reflects the deep spiritual link in Venda culture to sustainable ecosystems and ancestral knowledge systems.

A Vocabulary

What stood out for me in collection was beadwork, so similar to what I had seen in the Mai Mai Market (Kwa Mai Mai is a healers and medicinal market in downtown Johannesburg. Many beadworkers operate from the market, making traditional adornments for ceremonies and also

Curriculum lead in the 2021 School of Vernacular Algorithms: Philisiwe Dube. Image Credit: Tegan Bristow. Photo Credit: Zivanai Matangi

those of the Shembe religious tradition), and yet so much older.

I had recently been in conversation with a technologist named Lindwe Mtalai who was using knitting to teach coding in South Africa – her principle was that if your grandmother can do it, so can you. The link between the pixel styled knitting pattern and the beadwork was strikingly clear.

Soon I was on a new journey to KwaZulu Natal with Alex Coehlo and Russel Hlongwane to take a closer look at IsiZulu beadwork and Mozambican grass weaving.

What we found was far more than mathematical structure.

Emerging Questions

Staring with 'What is a Vocabulary for Vernacular Algorithms?', new questions formed:

- How do we conflate the mathematical and geometric with an experiential and symbolic encounter with life and community?
- Can we do this by joining philosophy, culture and the algorithm?
- How do we represent the environmental encounter with an algorithm?

Sound and lyrical curriculum lead of 2021 School of Vernacular Algorithms: Nhlanthla Mhlangu. Image Credit: Tegan Bristow. Photo Credit: Zivanai Matangi.

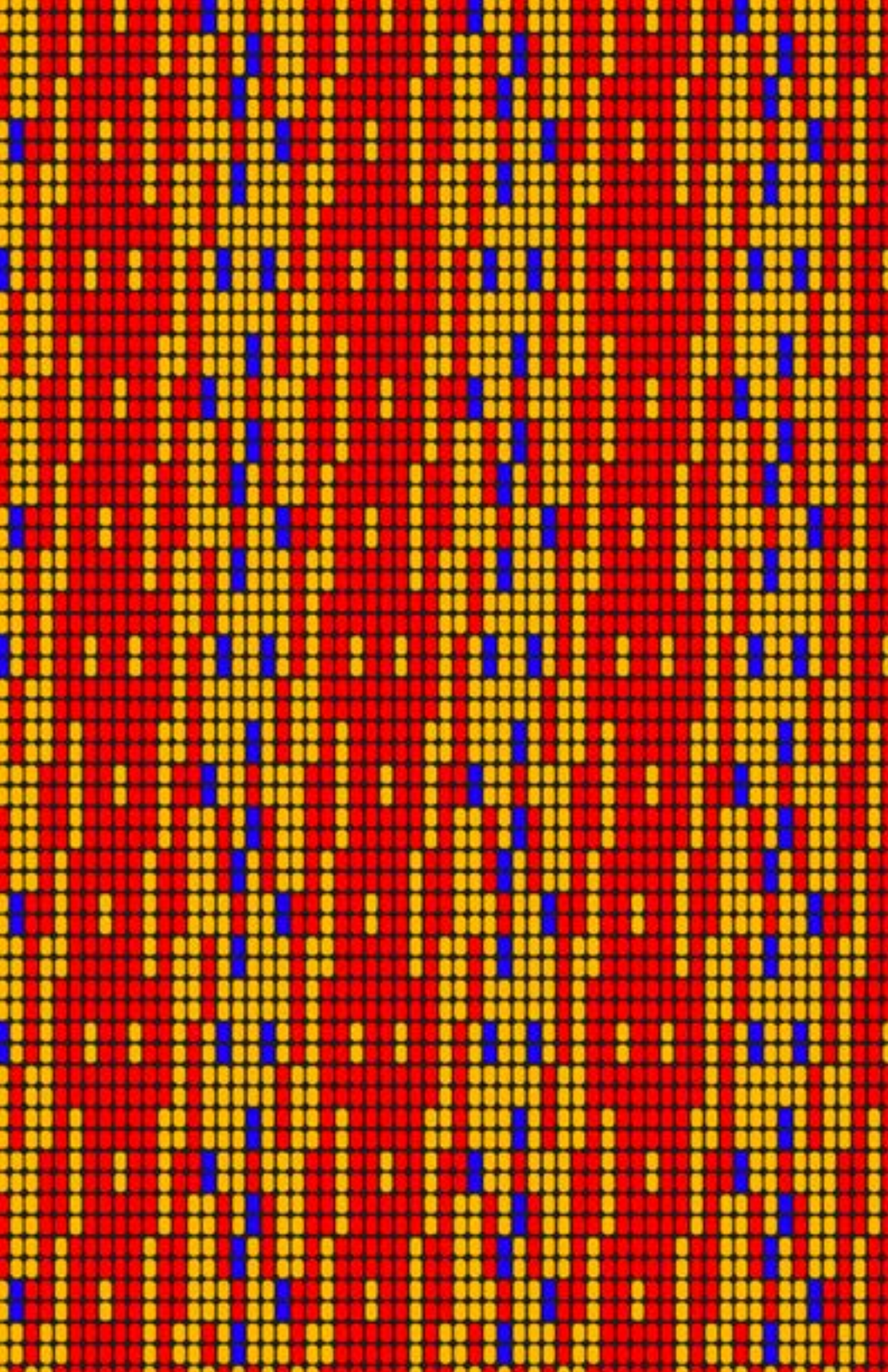
We ran a series of public facing workshops titled 'A Vocabulary for Vernacular Algorithm' to explore these questions. These were with cultural practitioners and coders, aimed at understanding communally the potential for an intergenerational practice and knowledge system to not only build a bridge to learning about technology, but further to critically interrogate contemporary algorithmic thinking.

From A Vocabulary to A School (University of African Futures)

In 2020-21, 'A School for Vernacular Algorithms' was formed by invitation from French / Senegalese curator Oulimata Gueye and initially formed part of the exhibition: *UFA – University of African Futures* in Nantes, France.

The school offered a culturally centered and hands-on learning encounter in three parts; to specifically engage and interrogate algorithmic thinking in Southern African vernacular knowledge systems. We used rhythm, beadwork and creative coding as forms informed the principles developed in the 'Vocabulary for Vernacular Algorithms'. The School was aimed at challenging with young learners the consequences of systems thinking in contemporary culture, both positive and negative.

Output screenshot from Interactive Video Installation (3 x 5 m interactive projection built with Processing and Kinect) at the School for Vernacular Algorithms. Image credit: Tegan Bristow.



Creative Code curriculum lead of 2021 School of Vernacular Algorithms: Tegan Bristow. Image Credit: Tegan Bristow. Photo Credit: Zivanai Matangi

It explored inter-generational value and a shared communal encounter in knowledge and systems.

The School was led collaboratively with Nhlanhla Mthlangu (algorithms in lyrical and sound cultures), Philisiwe Dube (beadmaking and math) and Tegan Bristow with Laurent Malys (Creative Code).

Q&A

What is the context or background that inspired your recipe?

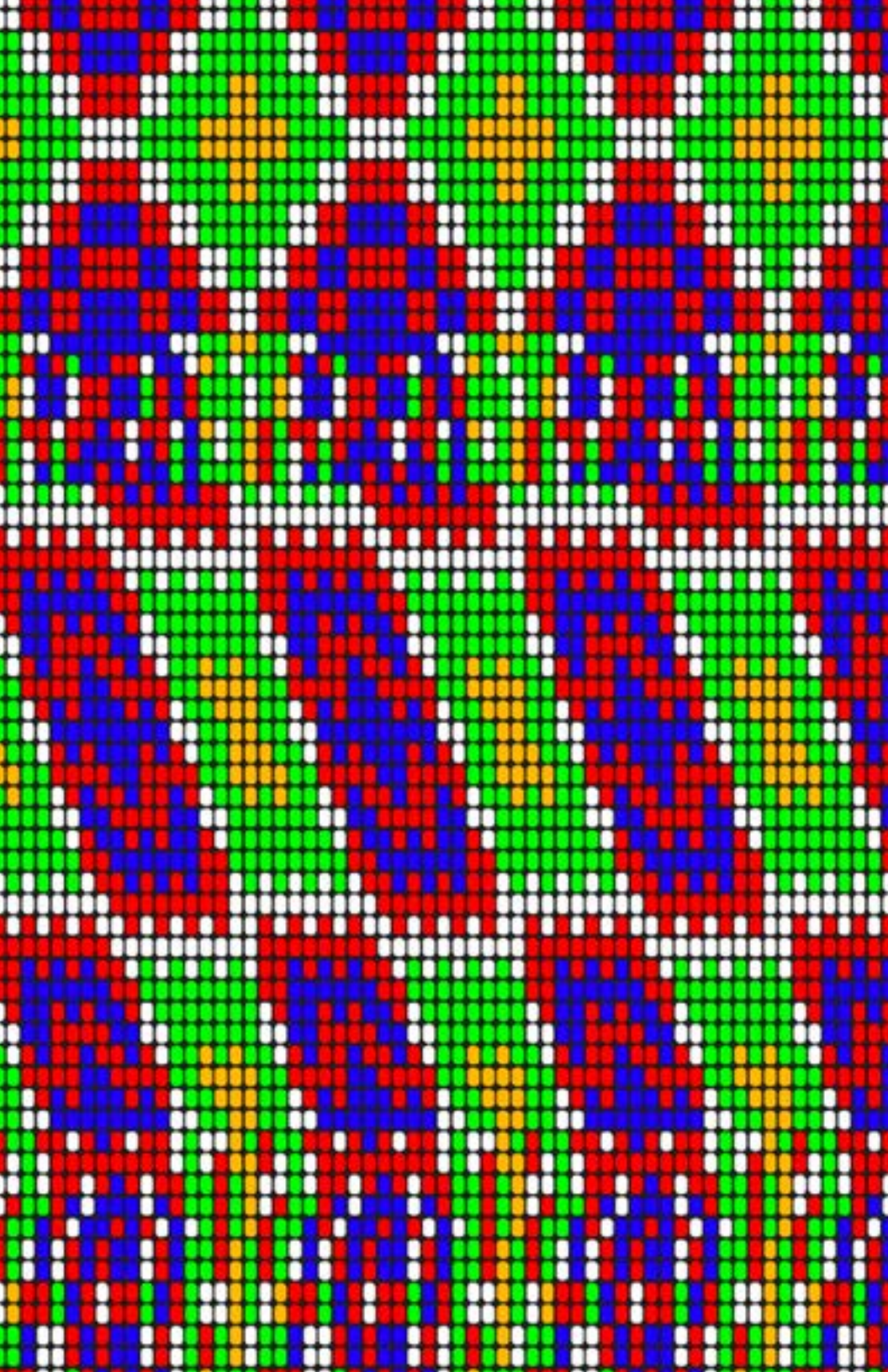
This recipe was born from research to situate pre-colonial African technology culture; an exploration of the Wits Art Museum (Johannesburg) collection through the lens of fractal mathematics (responding to Ron Eglash's African Fractals); a close exploration of Zulu Beadwork and a series of communally led workshops inviting cultural practitioners and coders to develop the concept of a 'curriculum for vernacular algorithms'. In 2021 this ongoing engagement become 'A School for Vernacular Algorithms', through invitation from curator Oulimata Gueye for University of African Futures; with Nhlanhla Mthlangu, Philisiwe Dube and Laurent Malys as collaborators in African memory games, beadwork and coding respectively.

Which community are you offering the recipe to?

Currently offering to communities (mostly in Africa or within its diaspora) who have a history that engages techne knowledge as part of its traditional and vernacular cultural and creative practices. The philosophical and critical enquiry aims to a) decolonise the notion that technical knowledges are only Western; b) understand the fascinating relationship between technical and cultural knowledges in Africa; c) bring this knowledge into contemporary African computing and digital practices and thereby an intergenerational link in math and culture in Africa; d) build confidence in young African learners on the relevance of their cultures in a technology oriented society.

How does your submission relate to intersectional feminism?

In many traditional African cultures it is women who hold, develop and pass on the techne and mathematical knowledge associated with cultural and aesthetic practices such as woven or beaded structures and the architectural processes of building sustainable homes. This knowledge is intergenerational and vernacular; passed in a community of practice. This knowledge is significantly imbued with the life of that community through which each woman contributes the values of their personality, role and lived experience to a longer trajectory of knowledge in that community. Design, materials and structure shift to meet their influence.



Kolam in Code

Lavannya Suressh

#pulliKolam #southIndia #kolampudu

Taking a clump of rice flour in a bowl (or a coconut shell), the Kolam artist steps onto her freshly washed canvas: the ground at the entrance of her house, or any patch of floor marking an entrypoint. Working swiftly, she takes pinches of rice flour and draws geometric patterns: curved lines, labyrinthine loops around red or white dots, hexagonal fractals, or floral patterns resembling the lotus, a symbol of the goddess of prosperity, Lakshmi, for whom the Kolam is drawn as a prayer in illustration.

Looking at Kolams, a traditional South Indian art form beyond something that's a daily ritual, by taking it as a valued precedent for mathematical learning concepts exploring rules that limit yet encourage creativity at the same time. Approaching this art form with code to create generative code-driven art forms following the same traditional rules and structures show that there is more intelligence required to perform this than credited for and a way of looking at Kolams alongside mainstream generative art. Exploring the form through technology, mathematical structures can play an important role valuing contributions to art science and technology from non-western cultures and women.

With our mathematical learnings, it is important to take examples and precedents from our cultures as practices. Pulli Kolam, a South Indian art form, is a great way to study fractals, geometry and looping patterns. Approaching this through code helps enshrine the intricacy of practices, which have, for a very long time due to colonialist epistemologies, seen as 'primitive' or 'primordial'.

The Recipe

A Journey Into Code

There are a set of rules that follow what is specifically identified as a Kolam. They are as follows:

1. Loop drawing-lines, and never trace a line through the same route.
2. The drawing is completed when all points are enclosed by a drawing-line.
3. Straight lines are drawn along the dual grid inclined at an angle of 45°.
4. Arcs are drawn surrounding the points.
5. Smooth drawing-lines. Lines should not bend in a right angle.

The rules and conventions will be explained in further detail going forward.

Method 1: Looping Kolams Across a Grid

In this method, we will replicate the core method of how the Kolam art is done. The dots are placed in a grid-like structure linearly across a diagonal first as a framework and go around in loops with arcs and straight lines following patterns and symmetry. The grid is however big or small you want the Kolam to be.

For the purpose of keeping simple, we'll go with a 4-fold symmetry i.e we start with keeping a square (everything is rotated by 45 degrees) in the

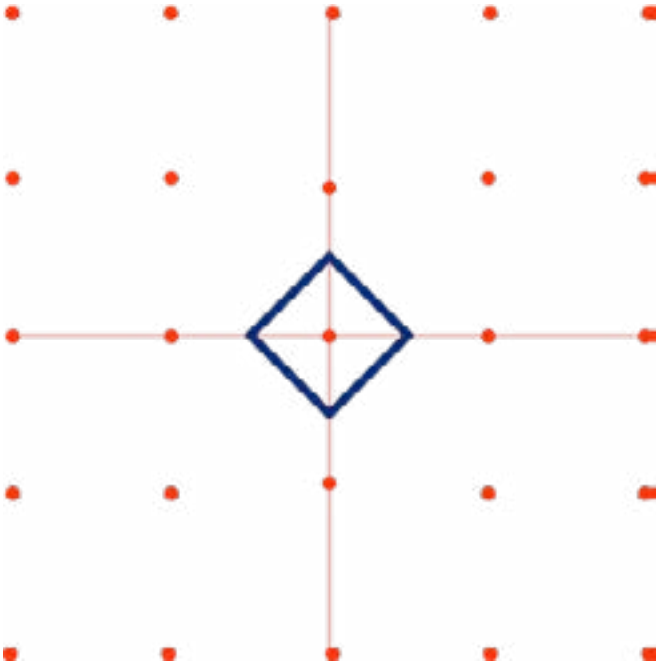


Figure 1. Image credit: Lavannya Suressh.

middle and the pattern repeats on all 4 sides.

There are 3 types of arcs that make up the single line drawing of a Kolam. They are all based on having 1, 2, and 3 curved sides of a square. The radius of the curved sides is half the side-length of the square. Assigning these numerical values to each type can be processed by the looping

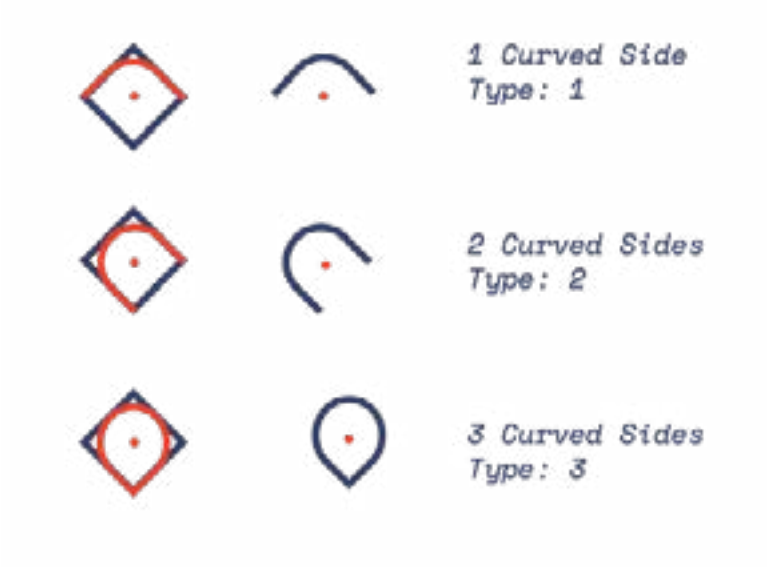


Figure 2. Image credit: Lavannya Suressh.

function. There are a set of rules that we follow while traversing across the grid to make up what distinctively identifies as a Kolam. The rules are illustrated in Figure 3 and Figure 4 below showing two case scenarios:

1. If the direction of traversing through the grid is the same.

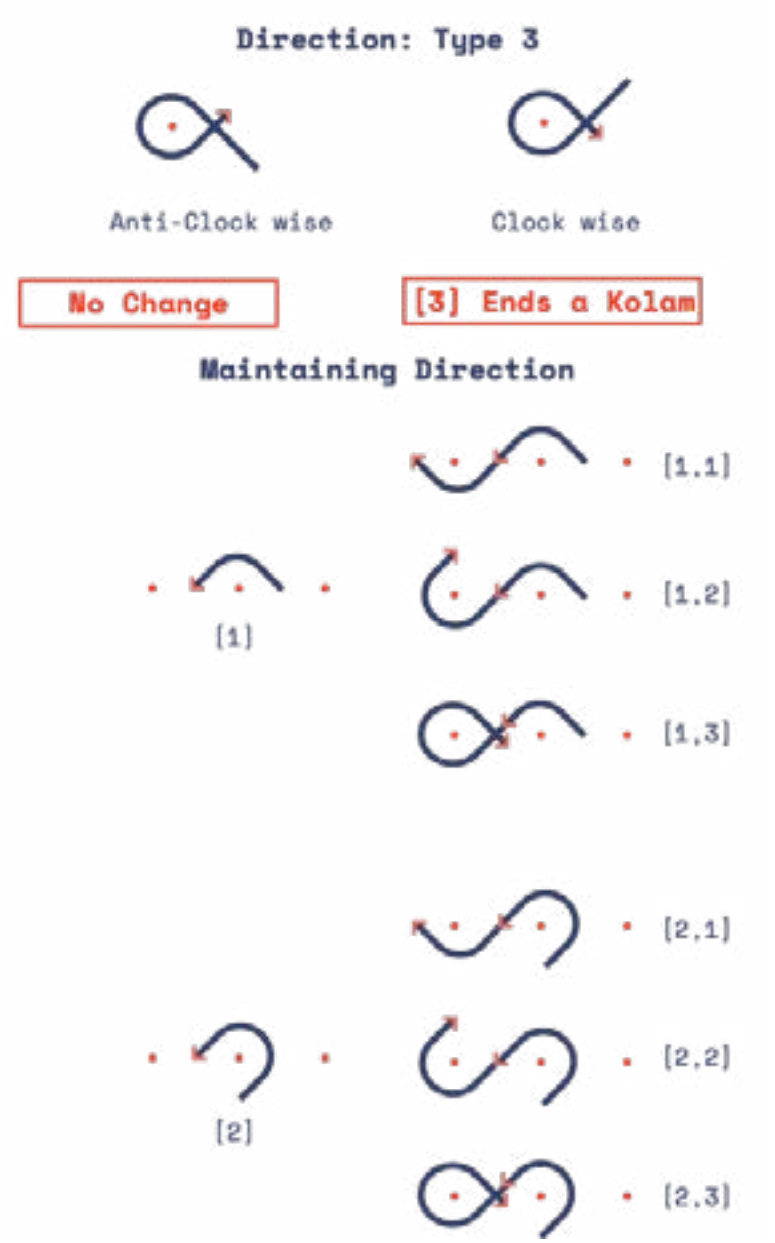


Figure 3. Image credit: Lavannya Suressh.

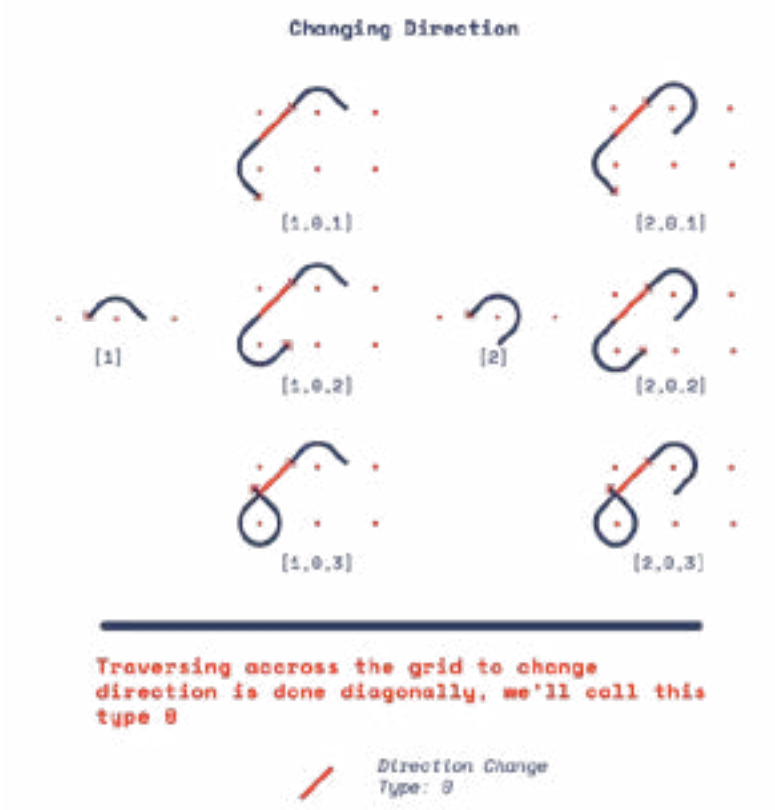


Figure 4. Image credit: Lavannya Suressh.

2. If you're traversing to the next row of dots.

Tips

» A Kolam always ends with loop type 3 maintaining the rule of leaving no loose ends behind.

» Type 0 is a straight line that needs to be drawn to start looping Kolams in the next grid.

» The forward looping is straightforward with numerical values 0, 1, 2 and 3. This can be inputted into the system in the form of an array.

» Since a Kolam ends at loop type "3" so the input arrays are limited to types 0, 1 and 2 and appended at the end with type 3.

Looping Back with a Grid

We follow a set of rules to loop back after we get to loop type "3" to form the closed loop structure of a Kolam. It is illustrated in Figure 5 below.

1. Loop type 1 is looped back with loop type 1
2. Loop type 2 is followed back with loop type 0
3. Loop type 0 is followed back with loop type 1

Kolam [3] is the most basic type of Kolam, The Kolams get increasingly complex based on the length of the array entered. Following these simple rules we will develop a recursive function to make a Kolam.

Below are the few examples of Kolams we can

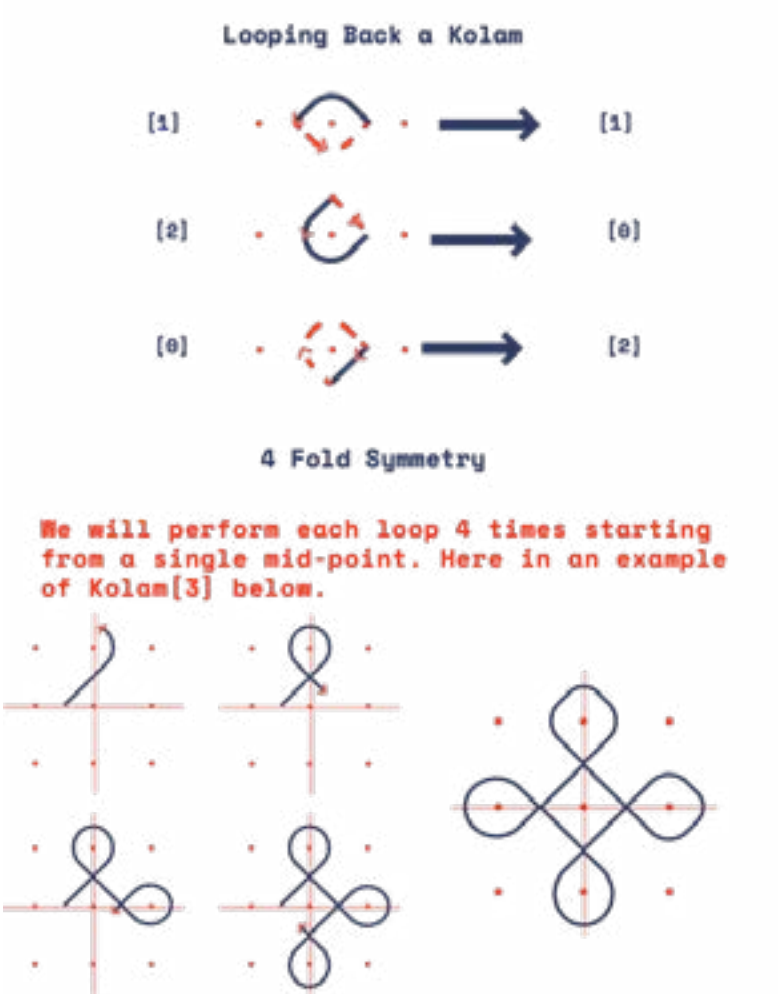
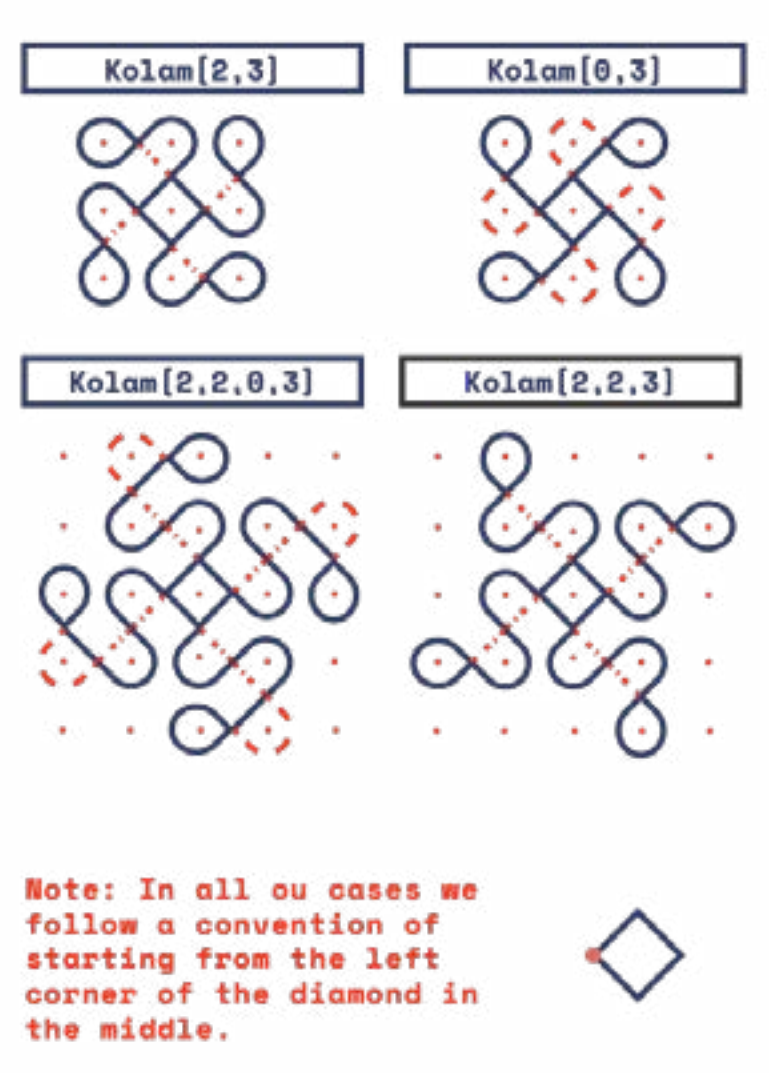


Figure 5. Image credit: Lavannya Suressh.


Kolam[2,3]
Kolam[0,3]
Kolam[2,2,0,3]
Kolam[2,2,3]
Note: In all ou cases we follow a convention of starting from the left corner of the diamond in the middle.

derive with the method discussed above.

A Recursive function where you go around the grid in a user inputs directing how you go around the grid with rectangles with a radius of curvature in different combinations of the sides and the

code computes how this is looped back to form a Kolam. This method has a lot more scope in terms of scalability and application of data, artificial intelligence etc. while taking Kolams forward.

Each number corresponds to one block of code that does the following as shown in Figure 7:

There are some import mathematical concepts we can explore through Kolams:

- Symmetry
- Fractals

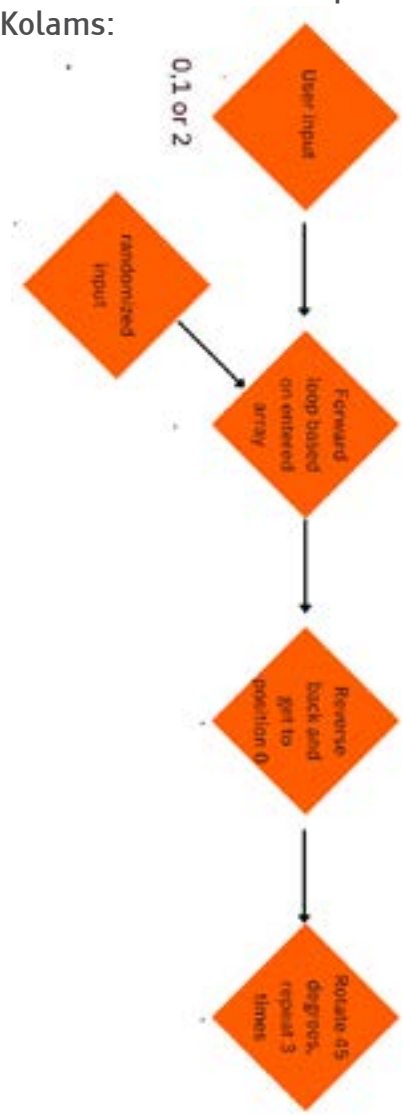

0,1 or 2
User input
randomized input
Forward loop based on entered array
Reverse back and get to position 0
Rotate 45 degrees, repeat 3 times

Figure 7.
Image credit:
Lavannya
Suressh.

» Array grammars

» Infinity

Method 2: Kolam Tiles and Shapes

Another way we can look at Kolams is based on the shapes that constitute it. This is a method derived from looking at the outlook of what a finished Kolam looks like and how it can be represented.

We will visually approach it by placing tiles in a framework. There are 6 types of tiles in different orientations shown in Figure 8:

Figure 8. Image credit: Lavannya Suressh.

These shapes are based on curved sides of the square in different permutations. Let's denote curved sides as 1 and pointed sides as 0. Taking a clockwise convention, the corners a, b, c and d can take binary values of 0 and 1.

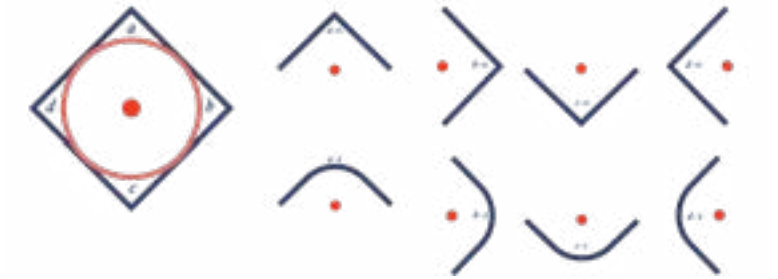


Figure 9. Image credit: Lavannya Suressh.

The framework of the grid is similar to a cartesian system but we consider only the coordinates from a diagonal. The framework is illustrated above in Figure 9.

Each side has 2 possible values and there are 4 sides so totally there are 2x2x2x2 permutations of shapes. This can be compared to hexadecimals with 4 bytes of data each taking either a value of 0 or 1. Figure 10 shows all the permutations of shapes. There are 16 shapes that make up a Kolam and can be denoted with hex codes.

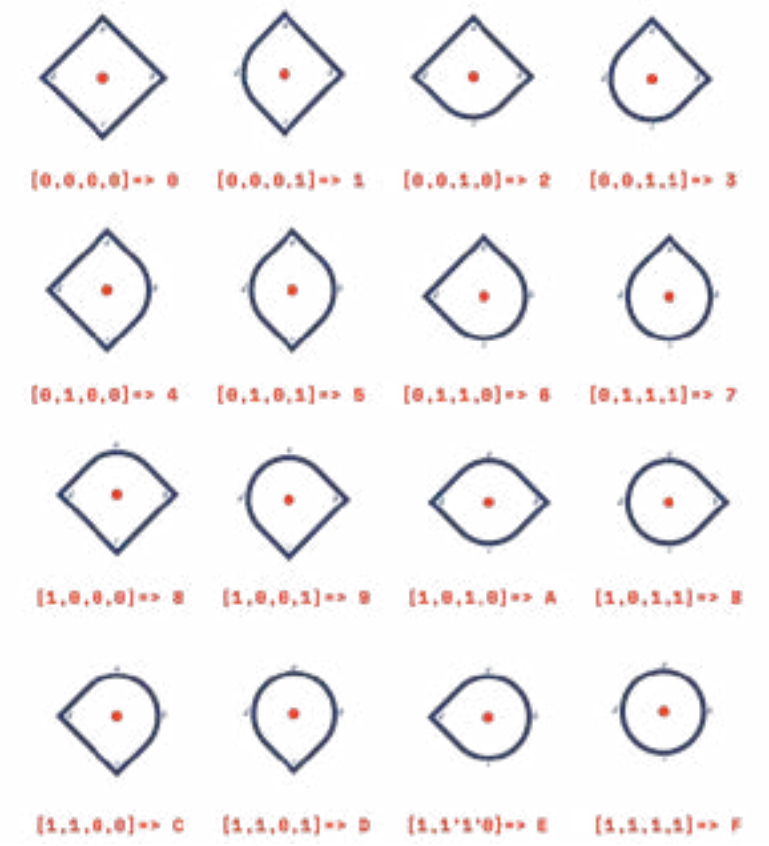


Figure 10. Image credit: Lavannya Suressh.

The grid where we place our Kolam shapes is important to understand and represent the Kolam structure. It is similar to a simple cartesian coordinate system in a diagonal orientation. We can structure a Kolam through this with a few simple rules. Figure 11 shows the grid structure and the corresponding coordinate values. Imagine a regular cartesian system rotated clockwise by 45 degrees. This is the convention we are following here.

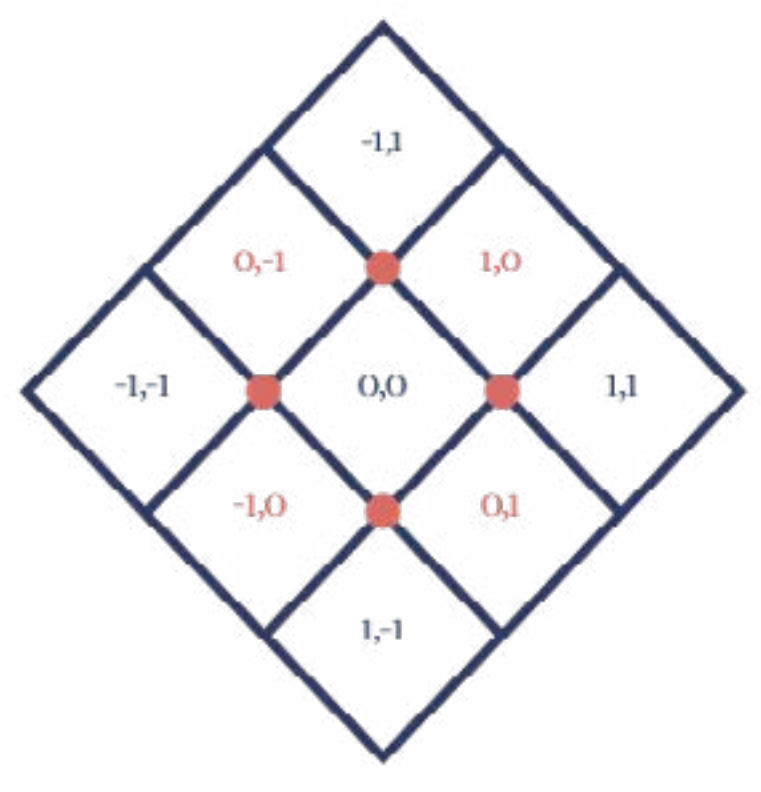


Figure 11. Image credit: Lavannya Suressh.

We have the constant (0,0) space where usually the symmetry of the Kolam surrounds. We will look at how the Kolam rules conform around the grid at

any given value x and y. Figure 12 shows the grid structure.

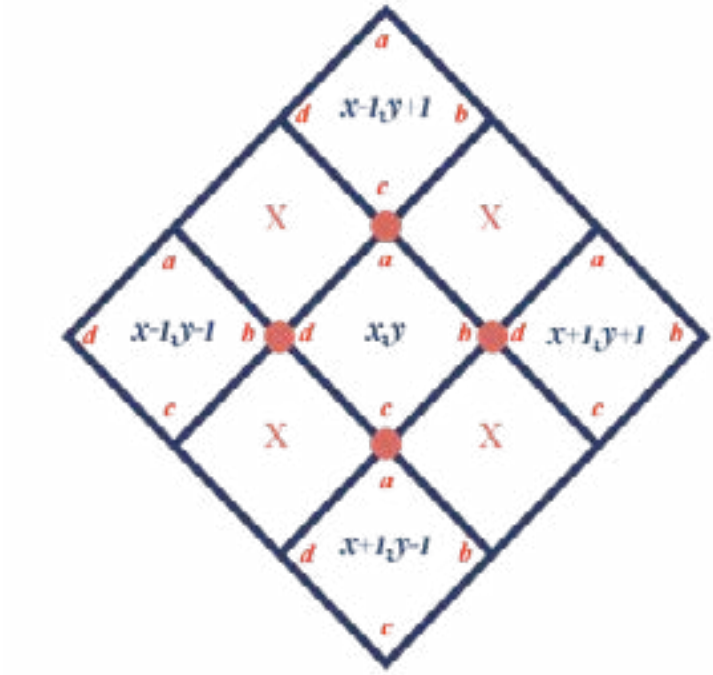


Figure 12. Image credit: Lavannya Suressh.

The rules that we follow while constructing a Kolam are the following:

1. The sum of the x and y value should be divisible by 2
2. Adjacent blocks have the same value at the point the joining point to maintain the single line drawing rule
3. Endpoints of Kolams must end with a "1"

a_{xy} refers to the "a" value of the (x,y) coordinate of the tile, The rules are for all the valid tiles

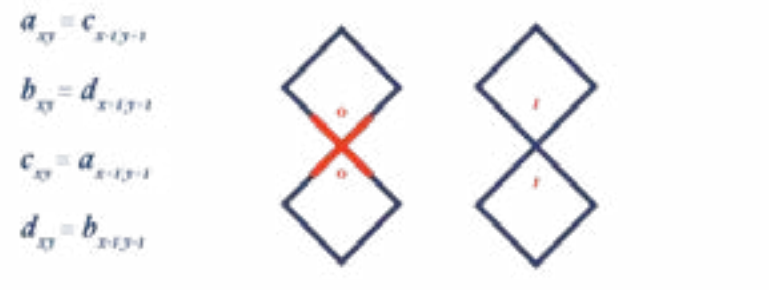


Figure 13. Image credit: Lavannya Suressh.

around it. They are Illustrated in Figure 13 below: This is very similar to data communication in 4-bit computers where the bit values need to match to progress through making a Kolam. Figure 14 shows a few examples of generated Kolams. Although this can be extended in any way following the given set of rules, maintaining some level of symmetry is part of the aesthetic of what makes up a Kolam. This generative method of computing Kolams across a space can have a lot of scope for understanding data and communication.

In computer architecture, 4-bit integers, or other data units are those that are 4 bits wide. Also, 4-bit CPU and ALU architectures are those that are based on registers, or data buses of that size. Memory addresses for 4-bit CPUs are generally much larger than 4-bit, such as 12-bit or more, while they could in theory be 8-bit. A group of four bits is also called a nibble and has $2^4 = 16$ possible values.

Some of the first microprocessors had a 4-bit

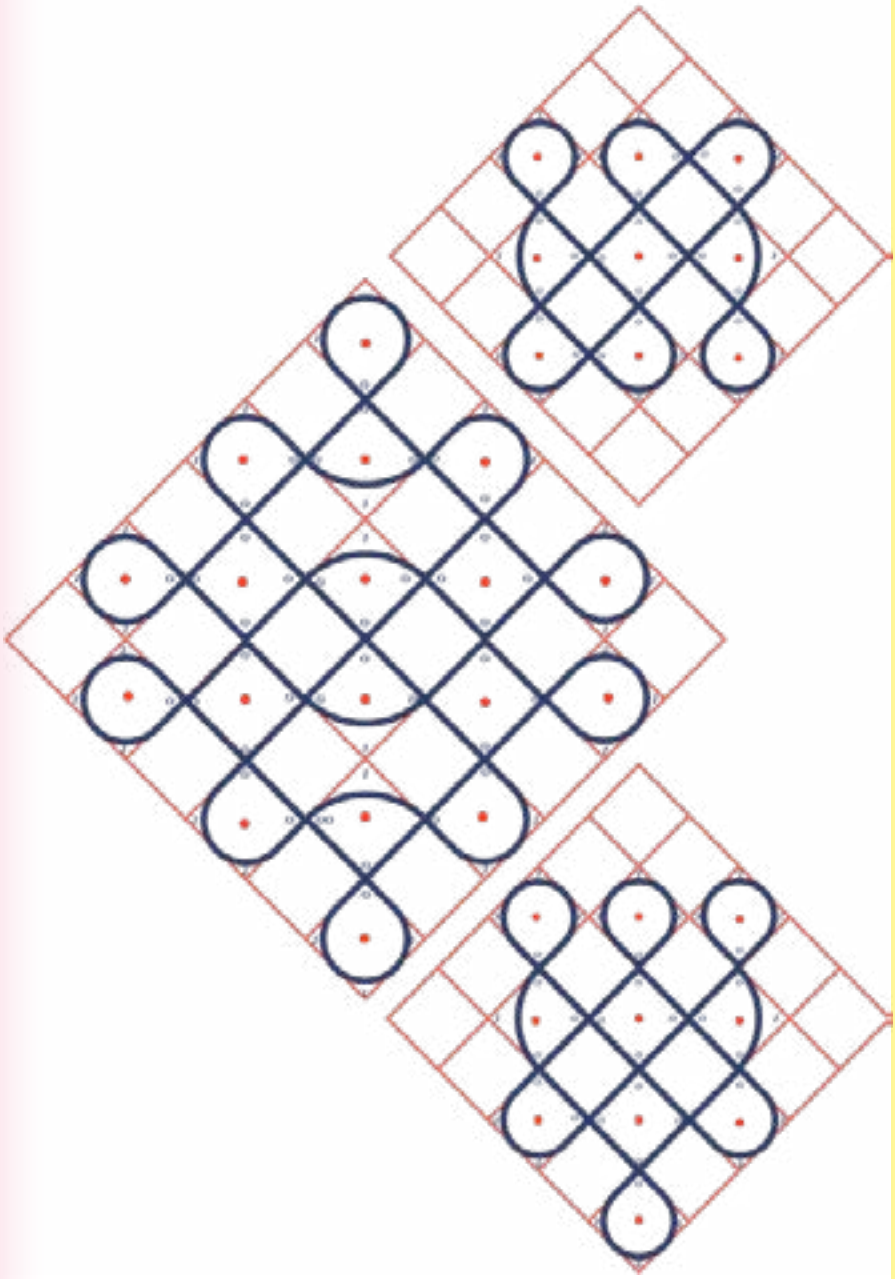


Figure 14. Image credit: Lavannya Suressh.

word length and were developed around 1970. Traditional 4-bit computers are by now obsolete, while recent quantum computers are 4-bit, but also based on qubits, such as the IBM Q Experience. See also: Bit slicing and bit-sliced quantum computers.

Q&A

What is the context or background that inspired your recipe?

While growing up I used to see my grandmother perform Kolams as a part of her daily morning ritual. There were different Kolam patterns everyday, and different ways of thinking involved. All this was from pinching rice flour between your fingers. I never questioned why this is the way it is or paid too much attention to it growing up, it was just an everyday thing. I once asked her where she learnt this from and she told me about her mother how talented she was and how if she had an education or a degree in mathematics she would be brilliant. She also mentioned how the present generation is "too-cool" to learn and take up these traditions. There is a lot of mention of mathematics and structure associated with the Kolam art form but this was something I wanted to dive deep into and explore for myself. More so see what Kolam can do for mathematics over what mathematics can do for Kolams.

Which community are you offering the

recipe to?

The community this recipe is relevant to would be the younger generation learning through a playful exploration of Kolams where we involve code, computing and technology to make generative explorations. Even for mathematicians and computer scientists, there are concepts where Kolam can be a good precedent to learn from.

How does your submission relate to intersectional feminism?

Throughout history there were gendered exclusions in tech centric fields and the intelligence required to draw increasingly complex Kolams have been undervalued. Exploring the form through technology, mathematical structures and taking it as a cultural precedent to learn mathematical concepts from can play an important role valuing contributions to art science and technology from non-western cultures, and from women.

Jingle Tales

Shafali J, Micah A, Sanketh K

#makeItYourOwnTechnology
#customisedRaspberryPi
#soundsOfPlay

We describe a project that we did in Mirzapur, India where we sent laptops made of Raspberry Pis to young women; that they could play with, reconfigure and use to explore their interests. The problem we encountered was how we could demonstrate the tactility and adaptability of these devices while having to compete with more 'complete' (read blackboxed) devices like phones and laptops. This recipe is a mix of one of these ideas, to be able to OWN your device by customizing the boot-up sound. The process would be an exploration of learning the device, a little bit of sound editing and learning to adapt python scripts. This recipe is a documentation of our way of trying to encourage the young women to customize their devices and play with the more technical aspects of it. This includes getting introduced to python, github, audacity and raspberry Pis.

The Recipe

The recipe below is for all those who want to move away from patriarchal, hegemonic values of computing systems which are often void of emotions. This recipe can be used by those who have Raspberry Pi OS and want to add a little personal touch to their system by customizing the boot up sound. It is also for our community of young women who have ASPI's and are finding their way forward. As mentioned earlier, ASPI is a unPersonal Computer built using Raspberry Pi which has a screen, keyboard, mouse and speakers bundled up in it. By following the recipe, you would learn a bit about how folders are arranged in a computing environment, play a bit on Github, look at some code in Python, create and edit some files on Audacity.

Hardware Ingredients

- Raspberry Pi
- TV with HDMI
- Keyboard, Mouse,
- Microphone OR ASPi (optional)
- Different cables

Software Ingredients

- Raspberry Pi OS
- Audacity
- Python (Thonny)

Steps

1. With the AsPI(/Raspberry Pi) in front of you, open it up, try and familiarize yourself with all the parts of the ASPi: Speakers, screen, keyboard, camera, power bank, different cables: usb c,micro usb, hdmi, charger
2. Familiarize yourself with the wires, try to match the slots with wires:
   - » Connect speaker and screen
   - » Keyboard to screen
   - » Camera to screen
3. Put in power and start
4. Did you hear the sound that played?
5. Let's change that jingle to something that you want to hear
6. Look into the folders try finding the etc folder
7. Open browser
8. Visit our COWPi repository on GitLab
9. Look for the download button, which downloads a .zip file
10. Right click and extract the files to another folder
11. Open your file browser, paste this /etc/xdg/lxsession/LXDE/autostart in the address bar on the top and copy the downloaded files here
12. Shut down the pi and switch it on?
13. Did you hear the song. Did it change to a different one?
14. Open audacity
15. Look at the big red button at top, press it, try speaking something, did you see a wave form-

ing. Press pause and save the file

16. Try recording your voice, try singing a song, bring in what you want that jingle to be…maybe your mothers voice calling you out, or that one song which you fell asleep to at the end of the day
17. Export this file as mp3
18. Copy this file in the autorun folder
19. Open the python script and add the name of the song you just exported
20. Copy as many songs you want to the folder
21. Turn off pi and start again. What did you hear?
22. What do you want to hear more?

Further Readings

- "Until the Cows Come Home"(2021), Aamne Saamne Pi and Shafali Jain.
- "Journeys dreams and everything in between"(2020), Micah Alex.

Q&A

What is the context or background that inspired your recipe?

We, at Janastu, build decentralised Community Owned Wi-Fi [COW] mesh networks and inclusive technology. We have been hacking together an

unPC: a not-so-personal computer, with a Raspberry Pi core, called the Aamne Saamne Pi (ASPi). It is a community-owned white box laptop which facilitates the creation, discovery, and re-narration of community expressions. This involves the young women asserting their identity and voicing their opinions, expressing their likes and dislikes in a safe space away from the prying eyes of the algorithm. To be able to do these things, just a slight prompt works wonders: which here was to customize the bootup sound.

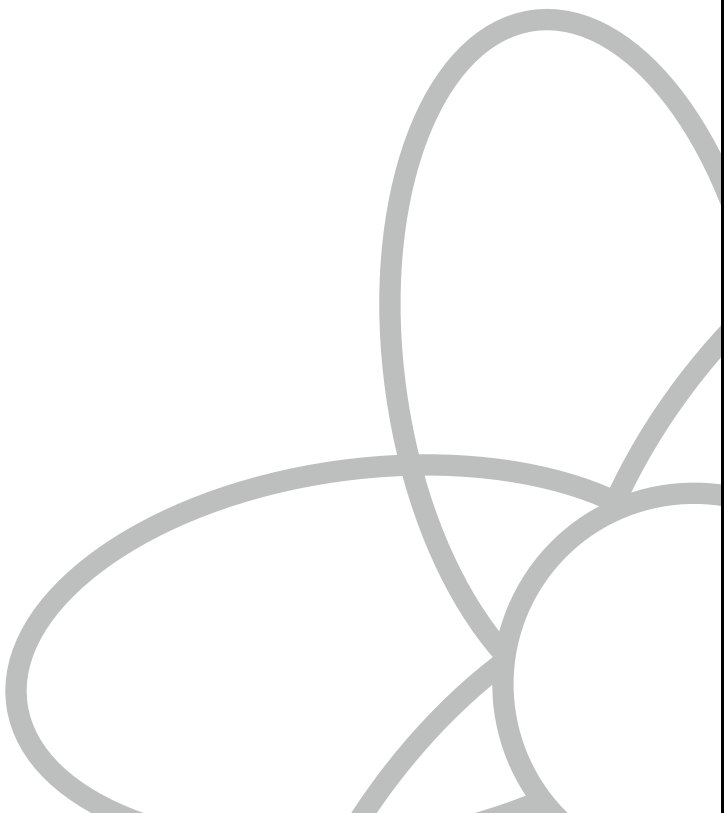
Which community are you offering the recipe to?

Janastu actively engaged in a dialogue with young women from a few villages in Mirzapur, Uttar Pradesh, India through the Work 4 Progress project. Originally the recipe was made for young rural women in traditional labor and skill contexts; typically low literate, and unconnected or unable to discover or publish useful content on the internet, for their collective needs of skill development and entrepreneurial aspirations. However, this recipe is for all who want to tinker with their Pi devices and have Raspbian OS installed. It's a way for someone to claim their devices, and in the process maybe find purposeful communities to actively engage with.

How does your submission relate to intersectional feminism?

While phones might be most familiar in low literate contexts, they are inherently personal

devices and carry stigma for the women who use them. In low income areas they are generally unavailable to the women and the low literate members of a household. Looking from the lens of intersectional feminism, devices could instead be inclusive, available to a group and adaptable to different contexts. In above contexts it is important to nurture a safe and cohesive community as exposure to the Internet increases. ASPi and the recipe act as catalysts that go a long way to making devices inclusive, accessible, playable and open to exploration.



Esolangs: Deprogramming the Language Divide

Echo Theohar

#linguisticInequality #esolang
#linguaFranca

English has operated as the lingua franca of coding for over half a century. Even in instances where non-English speaking coders are writing software in non-English speaking countries, it is common to encounter programming keywords in English. This is despite the fact that all comments, variables, and user defined classes are usually written in the programmer's native language, where they must quickly switch between a native and foreign binary during development. Is this really the most efficient way for non-English speakers to write software?

The Recipe

A Note on the Recipe

To be perfectly clear, not every programming language features English. We have a variety of programming languages written in and representing a large swath of spoken languages such as Arabic, Bengali, Chinese, Dutch, French, German, Greek, Hebrew, Hindi, Indonesian, Japanese, Korean, Latvian, Persian, Portuguese, Russian, Spanish, Tagalog, and Urdu, to name a few. In fact, a number of programming languages invented in non-English speaking countries boast a fair level of recognition on the international stage of coding, such as Python (Dutch), Ruby (Japanese), and Lua (Brazilian). So why aren't Python keywords in Dutch, for example?

Part of the issue is that many programming languages developed in non-English speaking countries are commercialized in English to appeal to an international audience. For example, PASCAL is a language which was developed in Switzerland by the Swiss computer scientist Niklaus Wirth. Instead of using any of the four national languages of Switzerland at the time, English was chosen as the premiere language to support the project. Given the present commercial and cultural dominance of English, this is unsurprising. Even before industrialization, British colonies used English as a tool of imperialism and colonization, with this legacy reaching deep into the history of the United States. By the end of WWII, English was established as the bridge language for all diplomatic, economic, and scientific affairs. Of course this influence has continued into present-day technology, where

English-based programming languages quickly became the norm. According to the HOPL online database of languages, English programming languages account for roughly 3,235 of all 8,500 programming languages recorded[1]. Knowing this, how does one begin to imagine an alternative to English based programming languages?

I offer this quote by Kimberle Crenshaw, where she describes intersectional feminism as, "a prism for seeing the way in which various forms of inequality often operate together and exacerbate each

1 Pigott, Diarmuid (2011). "HOPL: an Interactive Roster of Programming Languages". Via Wayback Machine.

other".

If we apply intersectional feminism to the issue of linguistic inequality in computer programming, we are able to take a step back and digest the whole. The first thing to recognize is that we are already deeply mired in a capitalist system that perpetuates the use of English in programming languages to access commerce, higher education, and a livelihood in the wealthiest nations. While this is inherently colonial and classist at its core, it stands at odds with the simplest definition of a lingua franca, which aims to act as a common language between nations for the benefit of exchanging diplomacy and research. Is it even possible to maintain the ideals of a lingua franca without soft-imperialism threatening to undermine it?

As we sit with that thought, I invite you to entertain two possible alternatives to English-based programming languages:

First, the development of a work culture that centers the localization of programming languages to support native-language character encoding and built-in operations (e.g. Chinese Python), or second – the abolition of English as the lingua franca of coding and the installment of an esoteric programming language in its place.

Are these the only two possible alternatives to our problem? Of course not! I am merely pausing on these possibilities because they serve to decentralize English-based programming languages while suggesting that the task of language

acquisition be evenly distributed across different nationalities. This is an ongoing conversation and I urge you to add your thoughts to this list.

Moving forward, I'd like to introduce esoteric programming languages (a.k.a. esolangs) to the mix. In essence, they are a type of programming language designed to be Turing-complete[2] while simultaneously testing the boundaries of programming language design itself, as either a proof of concept, software art, or meme. Most esolang creators don't intend for their languages to be adopted by working software developers; the endeavor of esolangs concern themselves with less utilitarian goals.

According to Geoff Cox, esolangs are experiments that seek to "shift attention from command and control toward cultural expression and refusal"[3]. Take for instance Brainfuck, an esolang designed for extreme minimalism with only 8 usable characters. This is an example of using Brainfuck to print out the word "Hello World!":

```
++++++++[>++++[>++>+++>+++>+<<<-
]>+>+>->>+[<]<-]>>.>---.+++++++..+++.>>.<-
.<.+++.------.--------.>>+.>++.
```

2 According to Google software engineer Mark Harrison, the term Turing-complete may be defined as, "a system in which a program can be written that will find an answer…so, if somebody says 'my new thing is Turing-complete' that means in principle (although often not in practice) it could be used to solve any computation problem"

3 Cox, Geoff (2013). Speaking Code: Coding as Aesthetic and Political Expression. MIT Press.

Brainfuck has been described by Daniel Temkin as "refusing to ease the boundary between human expression and assembly code and thereby taking us on a ludicrous journey of logic"[4]. These statements are indicative of esolang culture as a whole, which concerns itself with the inherent conflict between computer logic and human thinking. In our attempts to translate machine code into human readable code, we abstract a numerical language into common linguistic typologies to help human programmers read code as if they were reading a sentence or book.

However, there are many possible ways to abstract this machine language into human readable signifiers that do not even necessitate the ability to read, let

4 Temkin, Daniel (15 January 2014). "Glitch && Human/Computer Interaction". NOOART: The Journal of Objectless Art.

alone being able to read English.

We already use systems of abstraction such as visual programming languages to code elements graphically rather than textually; and when looking at esolangs that push the boundary of Turing-complete thinking, it really does feel that technically any system is possible, or at least possesses the freedom to be arbitrary.

So what is keeping us from inventing esoteric programming languages that democratize the task of language acquisition for all? With the right tools and creativity, it feels very possible to design a unique coding language standard that does not rely on the syntax of English. I believe it is in our hands (and well within our ability) to reimagine an equitable future for the lingua franca of code.

This recipe is designed to act as a discursive lab where participants propose speculative solutions to the ongoing issue of linguistic inequality in contemporary programming languages.

While this works well in an academic setting, this recipe is appropriate for any community interested in interrogating the white, western, and rational discourse surrounding English-based programming languages, through the context of creative coding, historical linguistics, speculative design, UX/UI, and intersectional feminist critique.

Ingredients

Please prepare the following ingredients:

1. An introduction to the history of linguistic inequality in computer programming
2. An introduction to esoteric programming languages

Group Discussion

Once the ingredients are in place, you may mix in the following elements to facilitate a group discussion:

- How do you feel about learning code based in your native language?
- How do you feel about learning code based in a foreign language?
- Do you think that having a lingua franca is useful for society? Do you think it is useful for programming? Why or why not?
- How do you define "human-readable language"? What rules must "human-readable" languages follow?
- If you were to design a new lingua franca for code, what qualities would it need to remain equitable?
- What are the limitations of designing a lingua franca for code?

Esolang Design Activity

This is an optional activity, recommended

for participants who have some background in programming. Each participant will need a pencil, paper, and colored markers. Split into working groups and draw up an original concept for an esoteric programming language (esolang) or visual programming language interface that addresses any or all of the following:

- Multilingual support
- Illustrative or skeuomorphic characters and symbols
- Alternative lingua franca solutions (e.g. tactile-based esolangs, shape/color-based esolangs, etc.)
- Absurdist translations of machine language to human-readable language

It is not expected that you create a Turing-complete syntax in this exercise. The goal is for you to expand your notion of what a linguistically equitable programming language might look and feel like, by illustrating a simple GUI with example elements. One easy place to start is to imagine what a “Hello World!” input and output would look like in your programming language. Alternatively, if you’re more comfortable with working off an example you are familiar with, you might draw an example of multilingual support options integrating into the programming language you know best. The idea is to have fun and allow yourself to see possible solutions to this problem, as they certainly exist!

Once complete, please gather back together and share results :)

Q&A

What is the context or background that inspired your recipe?

When my Japanese father and Mexican great-grandmother immigrated to the United States, they relinquished their native tongues to learn English. I am now a multi-racial programmer working in education – helping others with machine language retention everyday – and yet I have no linguistic connection to my own culture. The pain of this loss is not uncommon amongst the children of immigrants, and I found myself interrogating this lack in other aspects of my life as a programmer. Given that English has colonized the world of code, how do we move forward in a way that minimizes linguistic inequality and/or retains the cultural roots of established and emerging programming languages?

Which community are you offering the recipe to?

This recipe is offered to anyone with an interest in coding. My hope is that it will inspire you to contextualize the languages you learn or teach. There is a common misconception that English coding languages are neutral because they equalize all users – the argument being that everyone needs to learn the same syntax. But the real conflict lies in who dictates that syntax, and for who the syntax serves. English programming languages as a de facto solution to globalization is a reflection of that power disparity.

How does your submission relate to intersectional feminism?

Let's assume you are learning Python for the first time, and you do not know English. Your learning experience is going to be radically different from someone who is a native speaker, right? Add gender, race, class, etc. to that equation and you begin to have a multitude of very different experiences. We all begin our education of computer languages at different starting points, with differing amounts of privilege, discrimination, and access. We need to examine our own stake in the English colonization of computer languages in order to explore solutions that are cognizant of the experiences of others. This constant negotiation is rooted in intersectional feminism.

Cultural Access Memory (CAM)

Kevin Lee

#linguistics #chineseCharacters
#culturalHegemony

It's recently been put forward that the advent of language was a computing revolution - speech, and later writing, were the first forms of distributed computation, offloading individual processing and relying on peers and ancestors. Within this framework, if we consider language to be distributed computing, people themselves are the processing units. But what exactly are they processing? In some ways, they are Cultural Processing Users (CPUs), and specifically in the case of Chinese characters, their writing forms Cultural Access Memories (CAM).

The Recipe

Chinese characters are a vehicle of cultural conveyance; their various relationships and component pieces integrate to form a collective memory which performs a plethora of shared cultural beliefs, from familial values, gender roles, and various ideas of Us and Other. Yet, many native

speakers of Chinese and Japanese (and in lesser quantities Korean, Vietnamese, and so forth) rarely are encouraged to interrogate and debug the long history of character creation. Few speakers, for example, understand the phonosemantic nature of Chinese characters, as they're most alluringly understood as ideographic or pictographic, yet it's estimated that 80% or more of characters are indeed phonosemantic - comprised of one semantic component and one phonetic component.

By critically unpacking character components, examining their etymologies, we can start to decentralize power over these characters and the simultaneously beautiful and insidious ways in which they influence Eastern thought.

For example, consider 妻 tsuma, the character for “wife” in Japanese. The upper component is a hand grabbing the hair of the lower component, a woman. It depicts either the control of a woman by the assumed male reader / writer, or marriage by capture, a reality of the era in China in which the character was probably first conceived.

Consider the character for the Confucian concept of filial piety, 孝 xiào, an ideogram of an elder above a child. The idea of filial piety is directly embedded in the construction of the character itself. The power relations embedded in characters are not just limited to sexism and Confucianism, but cultural hegemony, power, cultural supremacy, and colonialism in various ways as well. This recipe is a way both to explore these relationships and decenter the conversation in characters from power, control, and superiority towards new visions.

Ingredients

- 214 Kangxi radicals
- 46 Hiragana characters
- 48 Katakana characters
- 24 Hangul letters
- 37 Bopomofo characters
- 12 Unicode Ideographic description characters (IDC)

Steps

1. Pick a number n from 1-10.
2. Randomly choose that number of Kangxi radi-

cals. For extra spice, include hiragana, katakana, hangul, and bopomofo. Not recommended for first time use since these character systems are not semantic.

3. Randomly choose n-1 ideographic description characters (IDCs)
4. (Optional) Think of a belief you hold. Any small or large will do, but ideally something rather Universal.
5. Using the IDCs, combine your components into a character, taking in mind semantic meaning and attempt to represent your belief. Keep in mind the left, outer, and upper radicals are often used semantically. If a radical's semantic meaning doesn't match (or it's a phonetic component like hiragana), use it to form your character's sound. Challenge yourself to use as many components semantically as possible.
6. Write your character's history. What does its story say about the people who use it? What implications does it have for who they are?

Serving Suggestions

Now, Think of a simplified Chinese version

Why is it more or less beautiful?

Now, Think of a Japanese etymologist's historical explanation

Contrast it with yours.

Now, Imagine your character as a sign, or as calligraphy

What aspects should be accentuated?

Further Readings

1. Gender across languages: The linguistic representation of women and men (2003), C. Xie
2. The Origin of the Word "She" and Female Subjectivity - A Review of "The Cultural History of the Word "She", Xin Wei Bi.
3. 汉字的性别歧视 (2014), 晶珍
4. A Study of Japanese Loanwords in Chinese (2014), Chen, Haijing

Q&A

What is the context or background that inspired your recipe?

This recipe is based on a project I worked on, which suggested 祂 and 伕 as new gender pronouns in Chinese. In many parts of the West, we're modifying our languages to remove a gender binary, or to introduce alternatives to it: ze/zir, latinx/latine, fisherman to fisherfolk. But Chinese's pronouns were essentially gender neutral until the introduction, during a period of Westernization, of the female pronoun 她. This new gender pronoun empowered women to exist in writing and laid the foundation for feminist thought in China.

Which community are you offering the recipe to?

Part of the reason this project came to life was the political and technical impossibility of deconstructing or modifying Chinese characters. Much like early 20th century China adding a female pronoun, Chinese people today ought to be able to change their language to reflect and to construct better realities. Instead, governmental control over the writing system has long been a form of soft power. I see constructing Chinese characters and embracing their inherent puzzle-piece-like playfulness as a way of reclaiming the power of language - the power to collectively speak into existence the societies and realities we want to live in.

How does your submission relate to intersectional feminism?

When I learned that Chinese lacked an explicit female pronoun until it was invented in the 20th century, I was stunned. Many Chinese characters already contain problematic representations of gender roles, but to think that prior to this, women could only be described or understood as female indirectly through inference boggled my mind. In a way the invention of the female pronoun in Chinese has a strange parallel with the introduction of neuter gender pronouns in English; both introduce a word in order to formulate an identity. By looking outside our own contexts we can see how different versions of the same problem affect all of us.

Black Radical Translation

Shayna Robinson

#blackRadicalism #poetry

Black Radical Translation is an exercise in demystifying computer programming by translating poems into code. This exercise seeks to engage marginalized persons, particularly those systematically and institutionally excluded from modern computing fields and industries, by:

» Centering Black radical poetic voices as important technological and cultural architects, and
» Naming computer programming as an epistemological descendant of poetry.

Contexts

What is the context or background that inspired your recipe?

This recipe is inspired by the creatives, past and

present, whose work transforms our understanding of what is technologically possible.

Which community are you offering the recipe to?

This recipe is for anyone who seeks a different coding epistemology.

How does your submission relate to intersectional feminism?

This recipe foregrounds a perspective that is rooted in race and gender and insists on the ways that these identities intersect to form meaning and create knowledge.

Body of Content

In 1843, Ada Lovelace, the daughter of the poet Lord Byron, translated to English an article written in French describing Charles Babbage's Analytical Engine, a precursor to the modern-day computer. Appended to her translation was a note detailing a method for calculating Bernoulli letters using the engine. This is often considered as the first published algorithm for use on a computer making Lovelace the first ever computer programmer. Through her "poetical science" approach in the paper Lovelace conceptually re-imagined the engine as a tool for manipulating symbols according to rules thereby introducing the concept of computation.

It is her poetic genius, her blending of the rational and the romantic, her ability to translate,

and her understanding of analogy and metaphor that Lovelace was able to envision the engine and its capability beyond its intended use. Her imagination has perhaps changed the course of history.

Thinking about Lovelace's contribution to computer design through her "poetic science" makes me think of June Jordan and her poetic approach to architecture in her work with Buckminister Fuller. "Skyrise for Harlem" is a design for public housing complex in Harlem, New York in response to riots sparked by the murder of James Powell, an unarmed Black man by New York City Police in 1964. The project aims to harmonize not only humans with each other but humans with the surrounding environment by replacing the segmented, grid structure of the streets with fifteen geodesic domes that could house up to 500,000 people (and relevant services and shops) with the surrounding landscaped raised and replaced with green space. The daughter of Jamaican immigrants, Jordan's prowess as a poet is evident in her speculative approach to urban redevelopment; here she literally centers the Black experience in Harlem and surrounds it with a healthy and lush natural environment, safe from the harms of state sponsored violence and oppression. While the housing project was never built it remains an inspiration to urban planners and place makers the world over.

It is this type of translation, the ability to communicate meaning across contexts, languages, disciplines, etc., that make Lovelace's and Jordan's contributions so spectacular. Their work of interpreting and re-imaging work by white men to give more relevancet and make more accessible

meaning for others is revolutionary. Their use of translation and poetry erupt in a transcendental imaginary that shifts our understanding of what's possible now and in the future. They offer us a way where there seemingly is no way. It is in this vein that I offer Black Radical Translation as inspiration and aspiration for anyone who needs it.

Ingredients

- One poem authored by a person who is well versed in Black cultural traditions, preferably queer and feminist (See Jordan[1], Lorde[2], Brand[3] for examples. See also Nepantla[4] for more exploration.)
- One computer programming language selected with consideration of its unique inputs and outputs
- A heap of fearlessness and determination
- A computer
- Some Internet

1 Poems by June Jordan on the Poetry Foundation website. https://www.poetryfoundation.org/poets/june-jordan

2 Poems by Audre Lorde on the Poetry Foundation website. https://www.poetryfoundation.org/poets/audre-lorde

3 Dionne Brand introduction on the Windham Campbell Prizes website. https://windhamcampbell.org/festival/2021/recipients/brand-dionne

4 4 Link to purchase Nepantla, an anthology dedicated to queer poets of color. https://nightboat.org/book/nepantla-an-anthology-dedicated-to-queer-poets-of-color/

Directions

1. Read and re-read the selected poem.

b. Parse out the themes that it engages, take care in examining its use of metaphor, simile, and word choice. Also take note of its structure and rhythm for use later on.

c. Reflect on the feelings the poem invokes in you and consider any call to action it may present.

d. Turn on your computer and open a plain text editor. A variation could be written in word processing software like Microsoft Word which will reveal consistent patterns of language normativity.

» Recall the persuasion of the poem and type it as a command or a series of commands in a computer programming language of your choice. The commands should mirror the structure and rhythm of the poem. Be thoughtful and creative in this endeavor.

Note: Code may or may not be executable.

Sonnet 116: Let me not to the marriage of true minds
William Shakespeare, 1609

Let me not to the marriage of true minds
Admit impediments. Love is not love
Which alters when it alteration finds,
Or bends with the remover to remove.

O no! it is an ever-fixed mark
That looks on tempests and is never shaken;
It is the star to every wand'ring bark,
Whose worth's unknown, although his height be taken.
Love's not Time's fool, though rosy lips and cheeks
Within his bending sickle's compass come;
Love alters not with his brief hours and weeks,
But bears it out even to the edge of doom.
If this be error and upon me prov'd,
I never writ, nor no man ever lov'd.

Shakespeare's 116th Sonnet in
Black English Translation
June Jordan, 2005

****

Don't let me mess up partner happiness
because the trouble
start
An' I ain' got the heart
to deal!
That won't be real
(about love)
if I
(push come to shove)
just punk

Not hardly! Hey:
Love do not cooperate
with cop-out
provocations: No!

Storm come. Storm go
away

but love stay
steady
(if you ready or
you not!)
True love stay
steady
True love stay
hot!

SQL Translation of June Jordan's Black English Translation of Shakespeare's 116th Sonnet Shayna Robinson, 2021

++

```
CREATE TABLE love (instance        TEXT,
                   value        INTERGER,
                   height       INTERGER,
                   provocation  TEXT
                   temporality  TIME);
DELETE FROM love
WHERE instance LIKE impediments
      OR instance LIKE trouble
      OR instance LIKE doubt;

SELECT value
FROM love
ORDER BY height DSC;

SELECT COUNT provocation
FROM love
LIMIT 1;

SELECT *
```

```
FROM love
WHERE temporality IS NULL;
```

Q&A

What is the context or background that inspired your recipe?

This recipe is inspired by the creatives, past and present, whose work transforms our understanding of what is technologically possible.

Which community are you offering the recipe to?

This recipe is for anyone who seeks a different coding epistemology.

How does your submission relate to intersectional feminism?

This recipe foregrounds a perspective that is rooted in race and gender and insists on the ways that these identities intersect to form meaning and create knowledge.

Secure Your Home IoT with the CryptoCrochetKey

Anuradha Reddy

#crochet #machineLearning
#criticalMaking

In a brave new world of quantum encryption, cryptocurrencies and NFT transactions, the concept of a 'key' is evermore abstracted by mathematical calculations when compared to the flat metal items we store in our pockets and purses. While digitally encrypted keys can make transactions relatively secure—like receiving an email, ordering a pizza, or dis/arming your home, they continue to be cryptic devices for those of us who are not already familiar with the technology nor supported by a civic hacker community. Is it possible to make a physical key, unique enough to avoid forgery while being recognisable to a local computer for making safe transactions? Thanks to a handy textile yarn called 'Crypto' and some inspirational reading on programmable yarn, it is possible to physically encrypt a key through crochet and then to teach a computer to recognize the crocheted key using

Machine Learning. The CryptoCrochet-Key is meant to be part 'hack' and part 'pedagogical device' that defamiliarizes existing computational practices (learning code) from an intersectional feminist lens. It is meant to be inclusive and empowering for those skilled in other ways than traditional programmers and to show how their skills can contribute to a critical discussion of data-driven technologies—i.e. by putting the tech to radically different uses. This 3-part tutorial begins by introducing CryptoCrochet-Key with instructions for making the key and then moves to the Machine Learning part of the project. The final part shows how to run the CryptoCrochet-Key Machine Learning model securely on a Raspberry Pi 4.

The Recipe

Crochet/knitting is a handicraft practice with strong associations to feminine, domestic hobbies and leisure. Although anyone who has engaged in the practice knows that it is, in fact, an intellectually demanding activity, one that takes advantage of the mathematical and mechanical properties of yarn and knitted fabric — anticipating how the material behaves with every stitch. Dr. Elisabetta Matsumoto, a physicist, has even argued that "yarn is programmable" and "knitting is coding" in her New York Times interview — a pedagogy that goes beyond coding binaries (ones and zeroes). Additionally, crocheting is an act of

distributed cognition — a complex choreography between reading coded patterns and making corresponding hand movements with more than a single apparatus, sometimes in a social setting if one can afford it.

Like other handicrafts, crochet does not separate the mind's intellect from that of the body(ies).

This argument is central to feminist, queer, and disability theories and a critique against positivist data-driven paradigms that strive to model reality from disembodied datasets (Thomson, 1997; Skeggs, 1997; Ahmed and Stacey, 2001; D'Ignazio and Klein, 2020). The act of crochet/knitting is also a labour of love, joy, and gift-giving — a kind of pushback and resistance to agile and extractive data-driven technology practices (Orton-Johnson, 2012; Hellstrom, 2013). If a community of crochet practitioners/fiber artists have a seat at the table with software developers and data science practitioners, what might they do (or say)? CryptoCrochet-Key is one possible answer.

Image credit: Anuradha Reddy.

Anuradha Reddy's CryptoCrochet-Key Gives You a Unique, Huggable Security Token for Home IoT

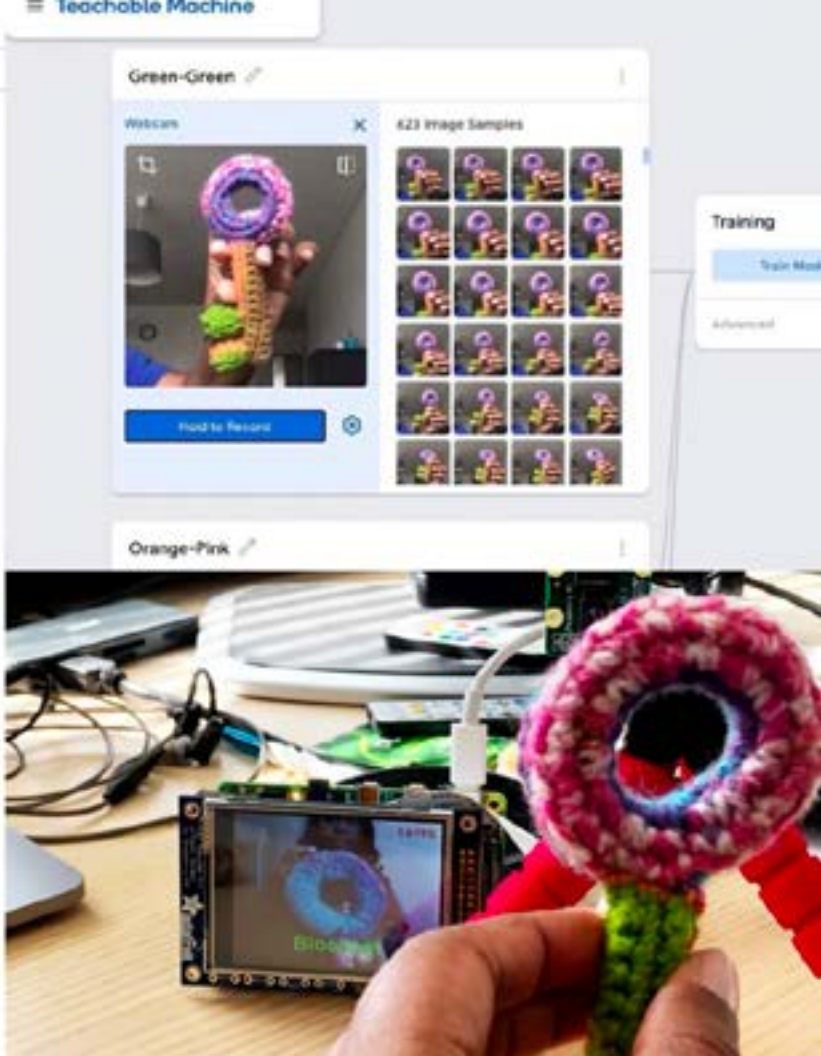
Made from multicolored yarn — handily called "Crypto" — these keys pair with a computer vision system to unlock IoT security.

Gareth Halfacree Follow

2 months ago • Machine Learning & AI / Security / Internet of Things

Design researcher Anuradha Reddy has come up with a unique take on physical security keys, with the CryptoCrochet-Key — a crocheted object which pairs with a computer vision system built on Teachable Machine to offer a unique authentication device for the smart home.

"Make your own uniquely unique keys to secure your home IoT AI devices



The word 'crypto' in CryptoCrochet has little to do with cryptography. Rather, the name is borrowed from a yarn called crypto 8 ply manufactured by the Panda yarn company (AusYarnCo). This yarn is multicoloured/variegated, which lends itself to joyfully crafting objects that are "uniquely unique". With each multicoloured stitch, it becomes possible to encrypt a discrete code/pattern in the shape of an object (in our case, a key) that only you have access to, and something only you can teach your computer to recognize. If you lose the key, you can easily make a new one and then teach your computer to recognize the new key and delete data for the old one. What makes the key-making process with variegated yarn especially enjoyable is one's loss of control over the yarn's colours, something one can liken to not being fully in control of how water travels when painting in watercolour. In the tutorial, we will learn how even the Machine Learning model has trouble making colour distinctions, something that we can use to our advantage to deliberately toy with the model.

Key Takeaways from the Tutorial

1. Inspiration for thinking of other non-traditional pedagogies for learning 'how to code',
2. The empowerment to experiment with technologies or methods from industry (e.g. Machine Learning) using everyday materials — layered, thick, colourful, and patterned (like yarn), and
3. to re-deploy them for ends that were never intended by their creators through feminist, queering practices.

The CryptoCrochet-Key is just one of many adversarial things one can make with variegated yarns to tactically encounter smart surveillance and computer vision systems. Going forward, it is possible to imagine exploring an entirely new genre of security authentication via knitted fashions (sweaters, suits) and wearables.

Part 1 : Making the Key

Here's what you will need to make the crocheted key. The first step is purchasing variegated/ multicoloured yarn from your local yarn shop (fun!) and a crochet hook to go with it (the recommended size of the hook should be visible on the yarn packaging). I usually recommend a cotton yarn with a hook size of 3.5-4mm. You will also need some cotton wool for stuffing, stitch markers (or hairpins) for marking rounds and a tapestry needle with a wide eye to weave in loose yarn.

Before starting to crochet, it is useful to know some standard crochet notations that will appear in this tutorial. We will use only basic crochet stitches like the chain stitch (denoted by 'ch'), the slip stitch ('sl st'), and the single crochet stitch ('sc'), which makes this a simple starter project. If you would like to learn the full range of crochet stitches, I can't recommend CraftyMinx's crochet school enough. If you are already familiar with the techniques, then the next section should be a breeze. Remember that the key is made in separate parts — the top doughnut ring, the long leg and two short legs.

You can find the PDF version of the pattern instructions on Github. Alternatively, if you would like to slip away from the computer screen for this part of the tutorial, I compiled the instructions into an 8-page zine that you can print and take with you.

Image credit: Teachable Machine.

Part 2 : Teaching the Machine to Recognize Your Key

Once you've made your key, you can teach your computer to recognize it. In technical terms, this entails a complex process of combining the Transfer Learning technique (unsupervised Machine Learning — Neural Nets) with an Object Detection model (a pretrained Machine Learning model) and Computer Vision (CV) that uses a camera to 'see' the object and learn what it looks like. Executing this feat would ideally require a prior understanding of data science and analytics, but luckily for us, there is readily available software that lets us train Machine Learning models without prerequisite programming skills or data science knowledge.We will use one such browser-based software program called Teachable Machine for this part of the tutorial.

> *Teachable Machine(TM) is a software to train your computer to recognize unique sounds, images, and body poses, allowing you to personalize your interactions with the computer.*

For example, with TM we can capture a large number of images of the crochet key via the computer's webcam — from different angles and under different light conditions — and use those images as training data for the model. Once trained, the computer can predict with some degree of confidence whether what it sees is your key or some other object.

This is easy to do. We start an 'Image Project' and create classes for the kinds of objects we want or do not want the machine or computer to recognize.

I made three keys, each with their unique variegated patterns. I wanted my computer to be able to recognize them individually. I named the keys 'Candy,' 'Blossom' and 'Sunny' (for my own visual recognition sake) and created separate classes for each of them.

Image credit: Anuradha Reddy.

For each key's class, I used the 'webcam' option to feed as many images as possible for that key. I also created a fourth class called 'Empty' because I also trained my computer on what it sees when there is no key in view.

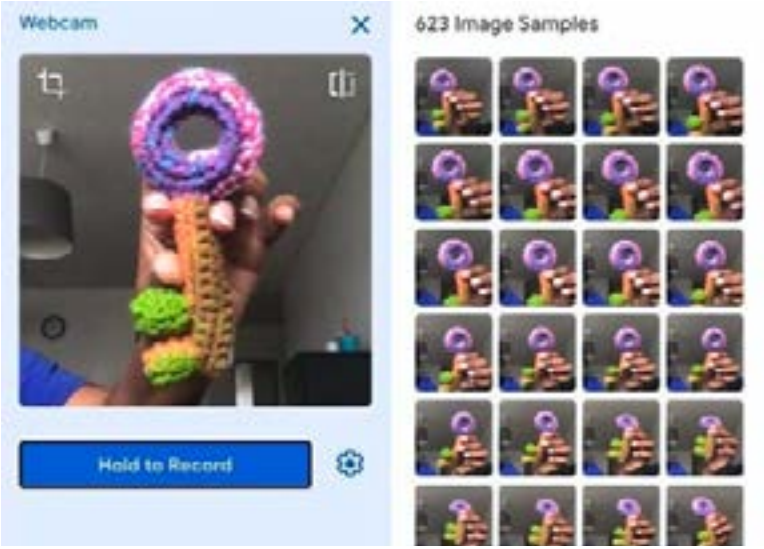


Image credit: Anuradha Reddy.

Once data is fed, the next step is to 'train the model'. This takes some time depending on the number of images, so it is recommended not to switch browser tabs while the training is ongoing. The result of the training can be viewed in the preview window to the right, which also lets you test your trained model.

When I presented the reverse side of Candy to the camera (image below), the model was only 78% confident that it was seeing Candy and 22% confident it was seeing Blossom. This confusion occurs because both Candy and Blossom share similar visual features from their source material but are still different enough to be recognized on

241 Image Samples

Webcam Upload

Candy

554 Image Samples

Webcam Upload

Blossom

623 Image Samples

Webcam Upload

Sunny

679 Image Samples

Webcam Upload

Training

Model Trained

Advanced

Epochs: 100

Batch Size: 16

Learning Rate:

0,001

Reset Defaults

Under the hood

their own. We can take advantage of this model uncertainty by creating several look-alike objects that are memorable to us (because we make them) but not easily distinguishable to the machine. This is the opposite of the "10000 bowls of plain oatmeal" problem found in procedural generation algorithms, where a machine can generate 10000 bowls of oatmeal with each oat in a different size and orientation. While every oat is mathematically unique to the machine, the human cannot distinguish them nor appreciate their uniqueness.

> *The crochet-key flips this problem around by queering the objects and the training data. Using variegated yarn in this way can help to play within the boundaries of the object detection machine learning models.*

What is also attractive about TM is that the training happens locally in your browser and not elsewhere on the 'cloud' network, which means it is possible to download and run the TM model offline, thus allowing you to secure your project even further. This is possible by exporting your trained model using the TensorFlow framework — an open-source framework that supports machine learning on edge devices (e.g. on a browser window, on a tiny computer such as Raspberry Pi, or even a microcontroller such as Arduino Nano BLE Sense).

For the remainder of the tutorial, I will demonstrate how you can create an offline secure application of the cryptocrochet-key TM model on a smaller computer i.e. the Raspberry Pi 4 using TensorFlow.

Part 3 : CryptoCrochet-Key on a Raspberry Pi 4 with TensorFlow

We have come a long way! But truth be told, we still have some way to go and this is my least favourite part of the tutorial because it is the most technical and the part I feel least confident about. However, it is a crucial section as it adds another layer of security to the project.

You will need a Raspberry Pi 4 to go on from here. Sadly, the previous versions of RPi do not have sufficient processing power to run TensorFlow on them. Additionally, you will need a Raspberry Pi Camera Board v2 and a display board so you can see what the RPi 4 is seeing and recognizing. For the display, I used a PiTFT 2.8" Resistive Touchscreen board that I already had at home, although Adafruit recommends an all-in-one board called BrainCraft HAT that is tailored especially for Machine Learning with RPi 4. I know this is a lot of expensive gadgetry to ask of a beginner or amateur maker, so if you can access a maker/hackerspace in your local area that allows you to borrow or rent this equipment, I would recommend that instead. There's also a learning curve to this part of the tutorial but I think pushing through it can help to overcome the fears that some of us hold for typing terminal commands to install libraries and other software dependencies. In other words, if you are new to hardware making/hacking, consider this a learning experience than an implementation.

I followed this Adafruit tutorial by Andrew Reusch to help me run the CryptoCrochet-Key TM model on Raspberry Pi 4. The tutorial is generally comprehensive, especially the TM part. However,

Empty

241 Image Samples

Webcam Upload

Candy

554 Image Samples

Webcam Upload

Blossom

623 Image Samples

Webcam Upload

Sunny

679 Image Samples

Webcam Upload

Training

Model Trained

Advanced

Epochs: 100

Batch Size: 16

Learning Rate:

0,001

Reset Defaults

Under the hood

Preview

Export Model

Input ON Webcam

Switch Webcam

Output

Empty

Candy 78%

Bloss... 22%

Sunny

I realised that there is actually a LOT of software setup and installations to be made for the RPi 4. I found help for this in another tutorial, but to save time, I will list out the steps I followed with links to each of them.

Steps

1. Initial setup on RPi 4.
2. Display setup for both BrainCraft and Resistive Touchscreen.
3. Camera setup and test.
4. Install TensorFlow (yes, the title says Tensor-Flow 'Lite' but it actually installs TensorFlow).
5. Visit TM and create classes (you already know this 🙂).
6. Capturing images via RPi's camera.
7. Train model.
8. Export TensorFlow model from TM and transfer onto the RPi 4.

Following these steps may require some patience and gut-feeling, especially if you are a newbie to terminal commands. It does work eventually! I even managed to play with the model's uncertainty e.g. the GIF image above shows the model's inability to distinguish between Candy and Sunny. In the end, I never deployed this project as a home security system because part of the fun was just seeing if I could and for it to be a learning experience.

Licensing Information

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Further Readings

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adafruit

hp 2335
Raspberry Pi
.6 FPS

Q&A

What is the context or background that inspired your recipe?

During my PhD studies, I found myself feeling stuck with industry-focused IoT and AI narratives. They tended to ignore the sociotechnical realities and imaginations of marginalised folks, including women and people of colour. Working now with hacker communities, I am inspired by femhackers' skills, their modes of hacking, and especially their use of diverse materials and hardware that challenge extant ideologies around who computation is for and who can benefit from it.

Which community are you offering the recipe to?

I think my recipe's contribution lies at the intersection of two broad communities of practice. The first is the crochet/knitting communities who are often highly skilled in their craft but struggle to apply computational thinking. The other is technical communities who are deeply competent in their programming knowledge, but struggle to integrate interdisciplinary ways of knowing and doing in their computing practices. Some prefer to call this intersection the 'STEAM' community.

How does your submission relate to intersectional feminism?

Intersectional feminism draws from the

knowledge that every individual has intersecting positions of power and privilege. My submission works to show that interdisciplinary making can cut across these positions of privilege i.e., by drawing attention to the reappropriation of dominant technology using techniques and grammars that are local and specific to craft communities.

Annotating a Feminist Internet (AtFI)

Nancy Mauro-Flude sister0.tv

#materialistInformatics
#networkCollaboration
#experientialPedagogy
#feministMethodologies

Annotating the Feminist Internet (AtFI) is a 2 hour writing session inviting participants to engage in expanding upon a draft set of '10 arbitrary working points' to swell the imagination of what a feminist Internet is, and what it could become. A springboard for participants to remap, reconfigure, edit, redefine in a situated performative framework - in relation to one another, reading together is a ritual means to re-read, invoke and re-write. Invited to initially meet on an open-source video platform, an antechamber before 'opting in' to the reading circle.

An acknowledgment by the hosts via a spoken word, and accompanying cue cards: acknowledging the guests, hosts and ghosts of ancestors past, present and emerging; the country where the AtFI server rests, and speaking the spaces inhabited by the participants may be a place where sovereignty has not ever been ceded. Subsequently the hosts usher participants through a chat element in a browser address bar.

In order to shift from the antechamber through to the main stage, to arrive at the location of the reading circle - a purposely configured Etherpad, an open-source text editor for real time multiple authoring.

A 'code of conduct' is bestowed and technical 'How To' preamble is delivered by the host - typed in real time for the participants to read and join. Participants are guided to circulate thoughts as they read and run text in a shared repository. The transition from communicating via audio/visual streaming, to reading and writing in network space, enables a perceptual shift and validates tacit modes of accessing and countering information.

The Recipe

Cookware

» Time Zone Converter
» An Etherpad – a tool for public collaboration
» An internet-connected computer device – connected to a monitor and keyboard, installed with a web browser (Chrome/Brave/Firefox)

Ingredients

» Hosts / Participants

- A score/script including a 'How To' Etherpad presentation and Terms of Participation
- Cue cards
- Draft set of 10 working points
- Code of Conduct
- Glossary

Tips

- For best results - it recommended AtFI is preferably hosted on an autonomous feminist server run server, but not essential.
- Manage expectations in advance and give recommendations to participants willing to work collectively, to nurture a tolerance for ambiguity and have respect for the Code of Conduct. In some cases dependent on context Code of Conduct can be built upon beforehand serving as an ongoing resource.
- Along with a draft set of 10 working points that elaborate upon the spurious nature of property and ownership and 'The forgotten female laborers, whose removal from that history is paralleled by the erasure of the work of ethnic or indigenous…coders… technology itself becomes a medium of critical theory… not only as a tool of "social dreaming" …but also as a vehicle for a radical critical… practice… often as a remedy to legal and political disempowerment' (Hanna Musial 2018, 166–7).
- It is suggested that a 'Code of Conduct' and Glossary are informed by the epistemologies of intersectional and fourth wave feminism to depict the embodied, situated, inexorable,

cherished, and radical ways in which the performance enabled participants to conduct provocative frolics on the front lines of text. You may want to build upon the feminist 'wave' metaphor and acknowledgethat the undercurrents of nautical lineages come to endure through 'debt, or inheritance' (Clarke Mane 2012, 78); a vicarious confluence of flows.

» It is highly encouraged that an explanation of the vast idea of modern computation was first articulated almost two centuries ago by Ada Lovelace (1842) whose depiction of computing capabilities contained transcendental and symbolic 'Notes'—align this with Ted 'hypertext' Nelson's stance on programming as a 'weaving of plans of events (and where they are to take place) – the choreography of happenings' (Nelson 1987, 40). Lovelace's (1842) proposition contends that below layers of obfuscation, her revelations endure in the emergence of bio-technical-cultural transformations in the twenty-first century.

Steps

1. Arrange a two hour duration of time and location with hosts and inform participants. (Make sure you include different time zones and hemispheres on the planet).
2. Develop a score/script including a 'How To' Etherpad presentation, draft set of 10 working points, Code of Conduct, and a Glossary. Prepared in advance by the hosts – they may be crowd sourced by the participants in advance and could contain computer subculture lingo, or they may consist of ethnographic observa-

tions, informed by feminist genealogies that are spectral and manifold, illuminating the plurality agendas that constitute computer mediated interaction. The potency of the mutable 'points' lies in their indeterminate stance, where new meanings and enunciations can brew.

3. Hosts initiate a verbal and written welcome and acknowledgement of country. Folding in Terms of Participation and introductions: `I'm name {waves}, name {waves} I'm name {waves} etc.`
4. Share the Etherpad link and move to the reading circle URL.

`Host <PREAMBLE>`

1. Shares Etherpad links in the chat for Terms of Participation and Code of Conduct.
2. Explains about data collection and identity, modes of keystrokes typed and deleted - will become archival documents in the next 2 hours and how participants can choose to remain anonymous.
3. A 'How To' link for latecomers (or people that may want to rehash elements should be visible at the top of the AtFi Etherpad).
4. Present a 'How To' Etherpad so that participants are able to choose a preferred colour and/or name, elaborate how as more users start to edit the document they appear in a list and hence there may be many textual colours according to whom is writing into the working points.

The 'How To' Etherpad steps:

1. Choose/change your desired name and colour [can change this at any time during the 2 hour event]
2. To do this click on the "3 people icon" at the top right of your browser page - click on the Colour square to choose your preferred colour and/or name.

As more users start to edit 'hello' into the document they will appear in this list and hence there may be many colours according to whom is writing into the text. <then copy and paste the 'how to; to the Terms of Participation>

The 'How To' Etherpad presentation should highlight the ways that individuals could represent themselves within the collective online writing environment. The advice suggests participants enter an author name, and to designate a colour of which both could be shifted and modified, at any time during the activity. Clarification can be made when more users start to edit in the document there may be many colours according to who is writing into the text, as a process that enables the individual subject to be seen as part of the broader collective. Participants may deliberately seek to concentrate on the visuality of typography, forming new compositional properties of words or liberating words from the anecdotal limitations of syntax, in a wayward manner arranging the space beyond lexical norms.

Lead a warm up session for the ensemble - this may include a series of stretches and basic

housekeeping Instructions for collaborative writing on a multiple-author writing pad (reminders for how to mute), making sure people have provisions like water, outline the guidelines to keep things flowing, seeding the ground that is open for flourishing, performative explorations into diverse *feminist traditions of knowledge production.

Hosts guide the collaborative writing session where annotations may overwrite, edit, correct, challenge, echo, duplicate, expand, solidify, summarise, nuance, incant... while carving out online space away from imperialist systems, and towards skill sharing, fluidity and multiplicity. Working from the position of an open *feminism that embraces multiplicity, diversity, gender-bending, queerness, unfixed-ness, becoming, transforming, shifting, making space for underrepresented voices, and not privileging our voices in relation to others.

Amidst temporalities, converging hemispheres enabled through a composition of computational networks and webserver software. In the spirit of 'a political project that calls upon us to combat the modern colonial tendency to presume that one framework can be marshalled to account for all the others (Van Der Tuin and Nocek 2019, 820)'. Throughout the two hour duration hosts should gently gauge that light is being shed on the valences and bedlam of technopolitics that circulate beneath the surface of the interface.

Stir up questions about the convergence of media theory, creative art practice and feminist waves to 'do whatever we know how to order it to perform' (Lovelace cited in Menabrea [1842] n.d)

that serve as a reminder that erasure in the realm of writing and technopolitics is not apolitical, nor ahistorical.

Depending on predelection you may want to reflect on the call for 'hybrid of feminist activist efforts' noted by Emma A. Jane, positing towards 'a recalibrated approach to collectivism' (Jane 2015, 285) to give rise to a vast communal realm for the expression of alterities. Expanding upon the Internet as feminist space is a critique of the usual instrumental perception of computation, and a metaphor to elucidate the abundant convergence of exchange as a stirring prolific space, oriented towards profusion.

After two hours:

1. Participants are thanked and the reading circle is closed.
2. Etherpad is modified to `READ ONLY` setting.
3. Host versions the session and makes a time-stamp.

`END`

Image 01: Writing the Feminist Internet – working points for the 21 Century v.1 30 May 2020, 1400–1600 AEST. The top of the image for participants' chosen name identification and a link to the Terms of Participation which includes a code of conduct. This gives an example and a glimpse into how different participant authors choose how to identify themselves: first name, unnamed, art duo brand, declaration of gender pronoun markers and so on. Image credits: Detail Screenshot Session 1 Writing the Feminist Internet – working points for the 21 Century v.1 30 May 2020, 1400–1600 AEST Image: Nancy Mauro-Flude.

Image 02 Detail: Screenshot Session 1 WtFI where colour play highlights delegitimize authorial authority and composts knowledge production. It alludes to a trajectory that is forking and diversified, a collective quixotic oddity, where many arms work as one, purposely writing in synchronicity and then in the occasional unpredictable asynchronous deviation the mélange of individual and collective participation. Beyond the adoption of a solution for WtFI (2020) could be considered a ruse to reflect upon the imaginaries of a 'Feminist Internet' in action, at the crossroads of theoretical interrogation, art practice and feminist webserver technology.Image credits: Detail Screenshot Session 1 Writing the Feminist Internet – working points for the 21 Century v.1 30 May 2020, 1400–1600 AEST Image: Nancy Mauro-Flude.

Licensing Information

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Further Reading

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Q&A

What is the context or background that inspired your recipe?

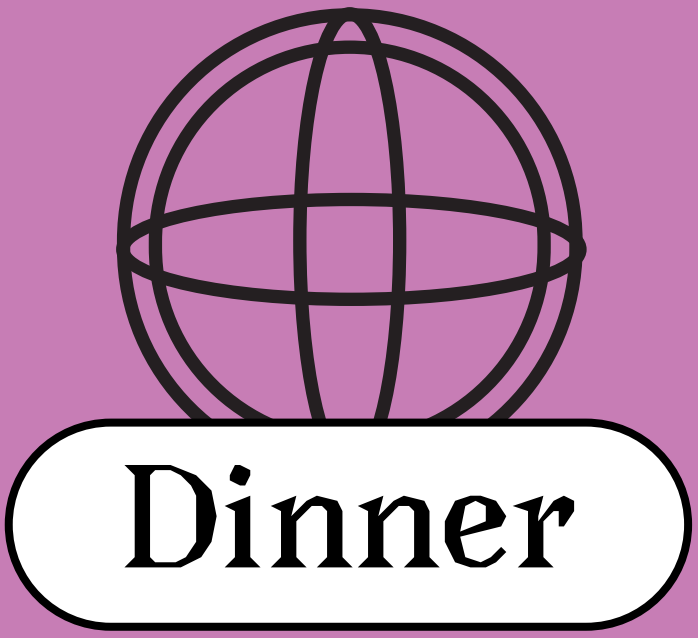
Feminist grassroots inspire the recipe counter cultures; womxn led technical events and autonomously determined communities. Foster experiential sites where tools, machines, webservers hard discs mutually act as hosts, guides and mediums (i.e., Gender Changer Academy (GCA) systerserver.net, the eclectic tech carnival /etc)

Which community are you offering the recipe to?

AtFI is a reading circle for transdisciplinary researchers, coders, readers, writers of fiction and non-fiction, artists, poets, critics, curators, designers, artists, critical theorists, feminist economists, healers, software developers, commons-oriented scholars, open-source software freedom fighters. Communities committed to tuning in to explore fertile directions in which to proceed, rather than just pointing at ossified obstacles around an emergent technology; attentive to holistic media philosophies and processes of techné.

How does your submission relate to intersectional feminism?

AtFI is a practice of digesting text to make it more accessible, just as much as it salvages and mends appropriated antidotes, replenishes perceptions, shares remedies, anecdotes and other offerings by womxn that have been erroneously diminished. Acknowledging gendered disparities, to embrace post-patriarchal futures, within an Etherpad, a low bandwidth, open-source text editor for multiple authoring, Taking the lead from Bailey and Trudy (2018) who 'reflect how misogynoir functions in social and institutional settings' (2018, 766), in order to seek out nascent forms and processes that steer away from racial-socio-cultural asymmetry, and other (techno)essentialist mandates towards alterities that exist beyond the yoke of imperialist regimes.



Towards a Reflexive Technoculture, Roopa Vasudevan / Digital Accessibility Basics, Kemi Sijuwade-Ukadike #accessibility #design #digital / Choreographies of the Circle & Other Geometries, Joana Chicau, Renick Bell / Failing to CODE, Becca Rose / How to code human bodies for devouring and mutual enlightenment, Mario Guzman / OCR 01-25-2179, Winnie Yoe / PAC-MOM: A Practical Rethinking of the "Classics", Annina Rüst / MUJERES EN LOS TIEMPOS DE BORGES Y KAFKA, Tamara Moura Costa

Towards a Reflexive Technoculture

Roopa Vasudevan

#positionality #ethics #collaboration

Developed from two workshop series and a class I led/taught in 2019 and 2020, this activity asks participants to consider their own actions and default practices when it comes to code and technology. This activity uses the concept of self-reflexivity, or an active and critical engagement with one's own practices and subject position, to surface the ways in which we are embedded within the systems we critique and may thus unintentionally reinforce them with our work.

Through a series of freewriting exercises and discussions, responding to prompts about positionality, technological processes and visions for the future, participants will interrogate their own complicity in hierarchical and socially rigid technical structures, and begin to unpack what needs to change in order to shift their personal practices to become more in line with their own values. Participants will then work together to build a contract containing both long-term goals and visions, along with the tangible, actionable commitments that they are willing to make immediately to reach that destination.

The Recipe

In a critical approach to coding, it is easy to look outward to pre-established practices and models, and examine where they might fall short or reinforce oppressive and hierarchical social norms. It is much harder to take a look inward, at what you do by default or take for granted, and acknowledge how you might be passively or unconsciously reinforcing belief systems that you purport to oppose.

> *To truly interrogate technological practice and its social implications, we need self-reflexivity: the ability to look at one's own practices, evaluate where one's own biases or privileges might come into play, and to make choices that actively recognize and work from one's current social position.*

Drawing from feminist standpoint theory, which in part advocates assessing the production of everyday accepted knowledge, objectivity and authority by considering the social and political standing of those making the rules—alongside the notion that those living in raced, gendered and working-class bodies, where these identity markers intersect in different ways, should be considered the experts of their own existences—the idea of self-reflexivity as used here asks us to actively take stock of our own place within a social hierarchy, and consider how we might be adhering to or perpetuating that hierarchy through the things we

have come to see as default as a result. Within the technology and digital design space, notions of self-reflexivity afford an opportunity to rethink the goals of the tools we build and systems we design; to question whose defaults we are accepting as our own; and to consider opportunities to develop new practices that more closely adhere to our stated values.

Self-reflexivity is hard to come by alone; and, while in its ideal form, coding is a collective, open-source activity—where each contribution adds to an ever-growing, shifting and evolving whole— the day-to-day reality of tech-based practice tends to get very isolating if you're not careful. Think of the stereotype of the lone hacker, hunched over their computer in the dark, not speaking to or interacting with anyone for days in order to sprint to the finish. Notions of success in technological practices also overwhelmingly emphasize the end contributions of the individual over a reflective evaluation of process; as Ruha Benjamin (2019) notes, radically reimagining technological systems "…takes time and intention, which runs against the rush to innovate that pervades the ethos of tech marketing campaigns" (p. 183).

The quickness of technological practice, as established by the "move fast and break things" mantra espoused by the dominant players, precludes an intentional, deliberate, conversational interrogation of benefits, costs, and harms. The question, then, becomes the following: how can we, as technologists, be more reflexive and aware of these issues as we work? How do we acknowledge the problems inherent in our medium—and in the subconscious decisions we make on a day to day

basis—while simultaneously trying to use code and technology for a greater good?

This group activity refuses individualistic models of tech usage and productivity in favor of a collective, collaborative approach to interrogating our own connections to the processes, tools and practices we use.

> *It is through this truly self-reflexive approach that we can examine our own embeddedness within the structures we are hoping to dismantle—and look for alternatives or opportunities to reject, refuse or rethink them, beginning with the ways in which we work every single day.*

The workshop can be conducted either virtually (over a video conferencing platform which enables real-time discussion) or in-person. It can be as low-tech or as high-tech as you wish to make it, and the prompts can be tweaked to the specifics of your group; there is flexibility in this recipe that encourages you to make it your own, and adapt it as you see fit. The important thing is that you are able to create a space for practitioners to come together and openly consider their place within established technological systems and structures, and commit to ways they can immediately begin shifting to more equitable practices.

Materials

» 8-16 participants (if possible, all participants should be compensated in some way for their time and labor, financially or otherwise).

- 2 to 3 hours of undisturbed, focused time.
- Collaborative writing tool (digital or physical; this can range from online collaborative writing software to Post-Its on a wall. The important thing is that people are able to create some kind of shared space together, where ideas can actively build on and connect to each other).
- Freewriting prompts.

Steps

1. Open the workshop with a land acknowledgement. As we think about constructing more liberatory futures for ourselves and our work, it is important to note that the first step towards undoing systems of oppression is to understand the ways in which we are inextricably linked to settler colonialist practices. While a small gesture, a land acknowledgement is the first step in examining questions of embeddedness and complicity, which are the major themes running through this workshop.
2. Have everyone go around the room and introduce themselves. In addition to their names, participants should include the following information:
    - Preferred pronouns
    - Current location (if a virtual workshop)
    - Any important designations that they feel contribute to how they see themselves in the world, e.g. hometown, age, gender identity, ethnicity, etc. Participants can use any, all, or none of these categories, but the important thing is that they spend some time grounding

the group in how they see themselves within the world, and what social and identity markers are crucial for that positioning. Please ask participants to refrain from talking about their job, experience working with code or technology, or anything else related to these ideas, as they will be probed in-depth throughout the workshop.

3. Freewriting. Read prompt 1 aloud to the group, and allow for 10-15 minutes of individual freewriting time in response. The facilitator should participate in this freewriting as well. Be sure to emphasize that there should be no filter on what is written; encourage participants to write thoughts down in response to these prompts as they come, and to let themselves be directed wherever the exercise takes them. If this is done in a large group, the freewriting stage can be done in pairs.
4. Discussion. Bring everyone back to the larger group, and ask for volunteers to share selections from what they wrote (in a smaller group you might go around the room and have everyone read something). Tell the group to make note of things that people say that resonate with them, that feel familiar, or that spark ideas. After the group is finished sharing, allow time for responses from the group, in which these resonant ideas can be brought to the surface and shared with everyone else. Allow this to go on in an organic fashion, and transition to the next step when it feels good to do so.
5. Repeat the freewriting and discussion steps for prompts 2-6.
6. Contract building. Direct participants to the collaborative writing tool you have selected for this

workshop, whatever that might be. The writing surface should be split into four spaces, according to the following prompts:

» "We uphold the status quo by…"

» "We want to change the status quo because…"

» "Our ideal vision of the future is…"

» "To reach our future vision, we commit to …"

Tips

» Have participants work together to finish these statements. This can be done in one large group, in smaller groups, or individually with participants actively building off of others' contributions.

» When the contract is done, have all of the participants sign and date it, document it, and make a copy for everyone who has participated to take with them. If everyone feels comfortable, exchange contact information or set up an email listserv to help foster accountability and support as everyone attempts to stick to these goals going forward.

Freewriting Prompts

1. How would you describe your relationship with technology? *What do you use technology for in your own work? How do you identify as a coder, programmer, developer, or technical designer?*

What are your technical contributions to this ecosystem, and how do you see yourself integrating into it?

2. What, as you see it in your own work, is the technological status quo? *What are the norms and defaults? What is taken for granted? Here you should make an effort to think about the things that you do in your technical practice that operate subconsciously or on autopilot. What don't you ask questions about? What is assumed to be "normal"?*
3. Where do you attempt to break the status quo? *What do you do in your practice to oppose the rules and structures that you feel to be problematic? How do you see yourself already moving towards a more equitable programming practice?*
4. Where do you uphold the status quo? *This gets a little trickier. Take an honest look at the ways in which you might actively be supporting existing systems, or systems that perpetuate power inequalities, bias, and social hierarchy in technology. Where might your privileges be blinding you? Where might you be benefiting from pre-existing structures? If you feel yourself getting defensive or uncomfortable, try to check in with those feelings and ask yourself why you might be experiencing them so intensely.*
5. Who do I want my work to be for? *Who is my work really for? Who is actually engaging with the work you are doing? How does this match up with who you envision your work for? Do your ideal audience and your actual audience line up?*
6. What is my vision for a more utopian technological future? *What is your goal for a more equitable technical practice? What would be ideal, and*

what work do you personally need to do to help get there?

Further Readings

- Ruha Benjamin, 2019. Race After Technology: Abolitionist Tools for the New Jim Code.
- Medford, MA: Polity.
- Patricia Hill Collins, 2009 [1990]. Black Feminist Thought: Knowledge, Consciousness and the
- Politics of Empowerment. New York, NY: Routledge.
- Sasha Costanza-Chock, 2019. Design Justice: Community-Led Practices to Build the Worlds
- We Need. Cambridge, MA: MIT Press.
- Arturo Escobar, 2018. Designs for the Pluriverse: Radical Interdependence, Autonomy, and the
- Making of Worlds. Durham, NC: Duke University Press.
- Donna Haraway, 1991. "Situated Knowledges: The Science Question in Feminism and the
- Privilege of Partial Perspective". In Simians, Cyborgs and Women: The Reinvention of Nature.
- New York, NY: Routledge.
- Sandra Harding, 1986. The Science Question in Feminism. Ithaca, NY: Cornell University
- Press.
- Sandra Harding, 2015. Objectivity and Diversity: Another Logic of Scientific Research. Chicago,

» IL: University of Chicago Press.

Q&A

What is the context or background that inspired your recipe?

This recipe stems from a realization that as much as we, as individual technologists, want to make our systems better and more just, the reality is that we build on top of practices that sometimes prevent us from moving in that direction. Often, the things we do by "default" keep us from implementing changes and making work that truly upends the status quo. In order to understand where avenues for agency and change exist, we need to work together to orient ourselves in relation to entities that control our relationships with technology—and to align our values in service of the outcomes that we want for the future.

Which community are you offering the recipe to?

This recipe is for anyone who makes with technology—whether you call yourself a programmer, a coder, a new media artist, a creative technologist, a hacker, an engineer, or a developer; who strongly believes in moving toward a more just and equitable technological ecosystem; and who is committed to closely and critically re-evaluating their own daily practices in service of making them align with their personal values, and with the values

of their colleagues and peers.

How does your submission relate to intersectional feminism?

This activity draws heavily from feminist standpoint theory, particularly in its focus on subject position and self-reflexivity. Through an active insistence that participants center their own relationships with technology—and the ways in which they might be unintentionally reinforcing or upholding the status quo despite better intentions—the workshop asks them to orient themselves within dominant power structures and systems in an effort to surface their influences on unconscious, default decisions. By understanding the ways in which we are guided by power, we can better begin to understand how to consciously change our behavior toward more liberatory ends.

Digital Accessibility Basics

Kemi Sijuwade-Ukadike

#accessibility #design #digital

Digital accessibility is the practice of ensuring that digital technology, including websites, mobile applications, immersive experiences, digital environments, and mixed reality, can be consumed by anybody or entity, regardless of visual, mobile, cognitive, and auditory abilities. This is an excerpt of the first chapter of the Digital Accessibility Syllabus I am researching, with support from the Processing Foundation.

Visually impaired girl wearing binocular telescope. Image Credit: IAPB/VISION 2020. Licensed under CC BY-NC-SA 2.0.

The Recipe

Digital accessibility is the practice of ensuring that digital technology, including websites, mobile applications, immersive experiences, digital environments, and mixed reality, can be consumed by anybody or entity, regardless of visual, mobile, cognitive, and auditory abilities.

Disability cuts across all our lives, with over one billion people with disabilities, or about 15-20% of the population. Any experience that is inaccessible leaves out much of this population. In addition, many disabled people rely on digital products to communicate and get information at home, in the classroom, in their professions, and in their activities of daily living.

For example, somebody with weaker arms may need to use a mouthstick to type. A person with auditory issues uses captions to watch videos. Those using hearing aids, and those who are blind or have low vision will use a screen reader to read aloud what's on the screen. A person who has suffered a stroke may have difficulty using a mouse. An older individual with dexterity issues may have problems using a keyboard.

Needing accessible digital environments is also necessary for the non-disabled, and/or those compromised due to situations such as a broken limb, pregnancy, or simply juggling tasks and only having one hand to work with. Imagine being in a noisy airport and needing to watch a video concerning your flight and having lost

your headphones. In this case, captions would be essential.

As someone who has total-body weakness and mobility issues due to the autoimmune disorder, Guillain-Barre, I often use assistive technologies in my activities of daily living. When I was bed-bound, I could not use my hands at some point and had to rely on my wrist to read books on my tablet. In this case, keyboard navigation was totally off until I managed to become strong enough to hold on to a pen with a wide grip to hunt and peck. At the time, a regular mouse was impossible to use and is still challenging. For my ability level, a trackpad and stylus are adequate when I need to use a mouse.

In addition, I really want to use voice-to-text software such as Dragon and Google Docs Voice typing tool, which for most English speakers are quite useful. The biggest caveat is that while English is my first language, my Nigerian and Jamaican accents from my heritage get into the mix, inadvertently, and the algorithm can't quite pick up these intonations yet! For those of you in artificial intelligence voice mapping, this could be an area of interest to include different accents in voice recognition tools.

Like me, many people with disabilities repurpose the technology in their environment to suit the ways their bodies can adapt, and how they need to use these tools with what they are faced with.

Access to digital technologies, including to the Internet, is a basic human right[1], according

1 See the Human Rights Council.

to the United Nations Convention on the Rights of Persons with Disabilities. Most of the international community has adopted this UN convention and other binding policies.

> *"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect" – Tim Berners-Lee, director and inventor of the World Wide Web Consortium (W3C)*

The World Wide Web Consortium (W3C) has created international standards for digital creations, in addition, the W3C Web Accessibility Initiative (WAI) has further developed standards and support materials to help designers, developers, content creators, designers and others in the field understand and implement accessibility.

W3C Standard Guidelin[2]

Perceivable

- Provide text alternatives for non-text content (such as alt-text).
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

Operable

2 This set of guidelines reference WCAG 2.1 at a Glance.

- Make all functionality available from a keyboard.
- Give users enough time to read and use the content.
- Do not use content that causes seizures or physical reactions.
- Help users navigate and find content.
- Make it easier to use inputs other than the keyboard.
- Understandable.
- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust

- Maximize compatibility with current and future user tools.

Universal Design

The practice of digital accessibility is deeply rooted in principles of Universal Design.

> *"Universal Design is the design and composition of an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability. An environment (or any building, product, or service in that environment) should be designed to meet the needs of all people who wish to*

> *use it. This is not a special requirement, for the benefit of only a minority of the population. It is a fundamental condition of good design." – The Centre for Excellence in Universal Design*

There is increasing social justice awareness to accessibility in general, and although this is not the scope of this course, it benefits us to be aware of these paradigms to guide our critical thinking behind the products we intend to design. Particularly principles of Design Justice and Disability Justice. I urge you to go through the further readings below.

I propose we begin by thinking about accessibility as a social issue.

Guiding Questions

- Who benefits from accessible websites? Identify those in your network that could benefit from universal design.
- What are some social issues concerning creating inclusive spaces?
- What is disability justice?

Further Readings

Disability, Design, and Justice

- Digital Accessibility Syllabus, Kemi Siju-

wade-Ukadike.

- Introduction to Web Accessibility, WC3.
- Video Introduction to Web Accessibility and W3C Standards (4 minutes), WC3.
- 7 Principles of Universal Design, The Centre for Excellence in Universal Design
- Design Justice, Chapter 2: Nothing About Us Without Us, Sasha Costanza Chock
- Changing the Framework: Disability Justice, Mia Mingus
- 10 Principles of Disability Justice (also read comments), Sins Invalid

Disability Types, Web AIM

- Visual
- Auditory
- Motor
- Cognitive
- Seizure and Vestibular Disorders

Community

- A11y Meetups

Q&A

What is the context or background that inspired your recipe?

While managing artists at Eyebeam, one big issue that arises is how to create digitally accessible platforms. To some, it is a novel concept that they wished they had awareness of earlier. I want this to serve as a guide to immersive experience creators in thinkinging about universal and inclusive design, and creating accessible content.

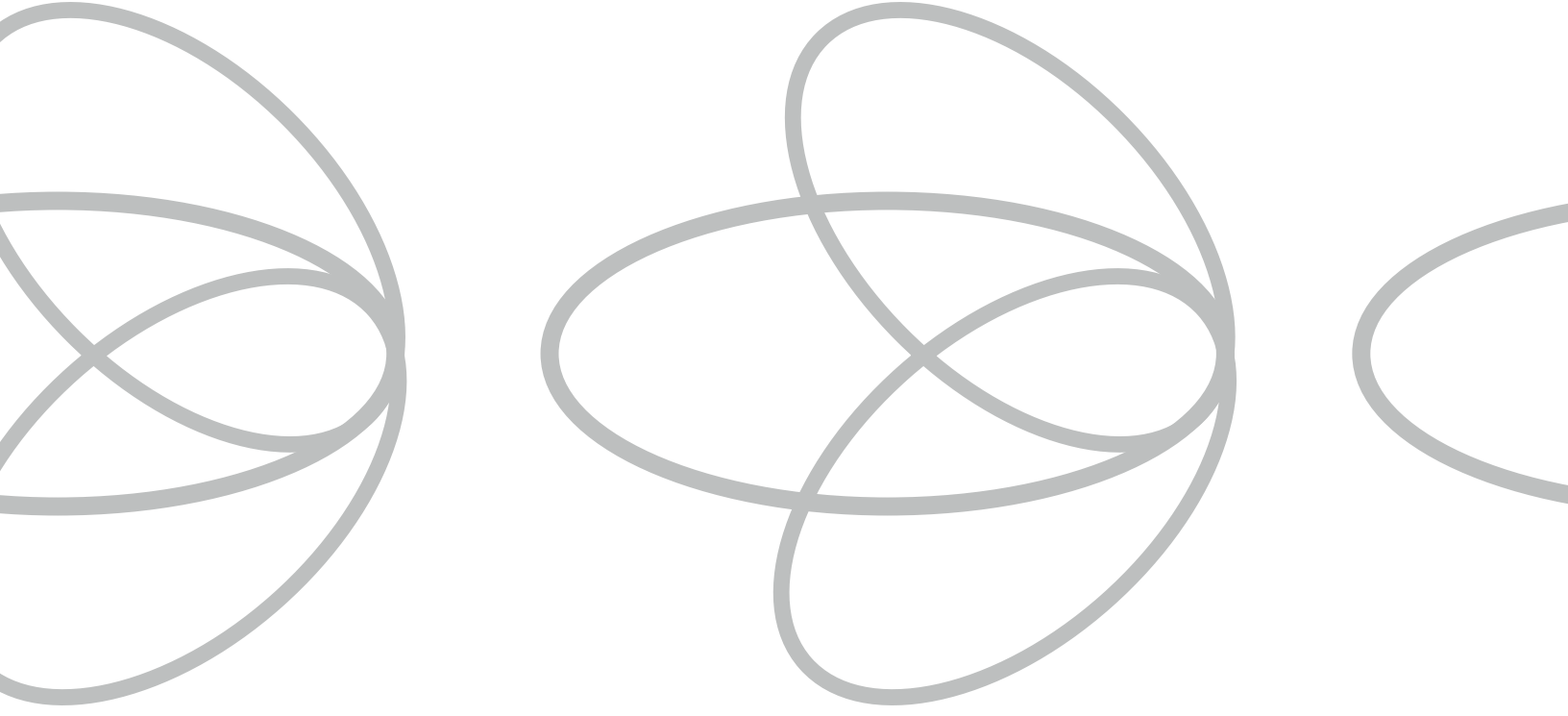
Which community are you offering the recipe to?

Anyone wanting to create digital content that can be accessed by anyone, regardless of ability.

How does your submission relate to intersectional feminism?

As a woman facing total-body/physical mobility challenges, I need access tools to complete almost every task, including my digital work. I use voice-to-text tools, as well as adaptive interfaces such as exists in my home office setup, from a vertical mouse to an ergonomic keyboard, even down to my seating and workspace setup. Being involved with teaching about and learning more about digital accessibility, makes me feel more equity in my contribution to this personally vital field.

As a black woman of African and Caribbean descent and as a mother of two teenagers, it is important that my work exemplifies the range of opportunities that are available within this field of art and technology, for other women and youth, especially black and disabled folx.



Choreographies of the Circle & Other Geometries

Joana Chicau, Renick Bell

#audioVisual #algorithmicPerformance
#collaborativeCompositionTools
#esolang

Choreographies of the Circle & Other Geometries is a research project initiated by Joana Chicau & Renick Bell on socio-technical protocols for collaborative audio-visual live coding and a corresponding peer-to-peer environment programmed in JavaScript.

The project reflects how language boundaries are enacted through the computing environment and within social spheres. It explores how movement, gestures, discourses, and behaviours are choreographed and communicated through the apparatuses at work and how our hybrid digital systems and transdisciplinary research practices co-construct each other. It is informed by on-going research and recollection of musical and choreographic sources and scores that reference principles of non-linear composition, non-hegemonic time and space constructs, techno-feminist understandings.

Círculo e Meio | Circle & Half, an audio-visual live coding performance combining choreographic thinking and algorithmic improvisation. Image credit: Joana Chicau, Renick Bell. Photo credit: Henrique Palazzo.

Screenshots from a Círculo e Meio | Circle & Half performance.
Image credit: Joana Chicau, Renick Bell.

14

... ly div.stage02

Styles Compute

Filter :hov

```
element.style {
}
.otherthan {
```

Console Is

top

```
s:355)
    at sa._ti
ent.ts:295)
    at Bo.inv
portEvent.ts:
    at Bo.inv
portRepeatEve
    at zo.inv
portEvent.ts:
    at Transp
    at Timeli
    at Array.
(<anonymous>)
Dancer   cons
06: sequencin
Dancer   cons
02: morphing
Dancer   cons
02: breathing
Dancer   cons
02: morphing
Dancer   cons
02: morphing
dancer   cons
03: circulati
Dancer   cons
06: sequencin
```

The Recipe

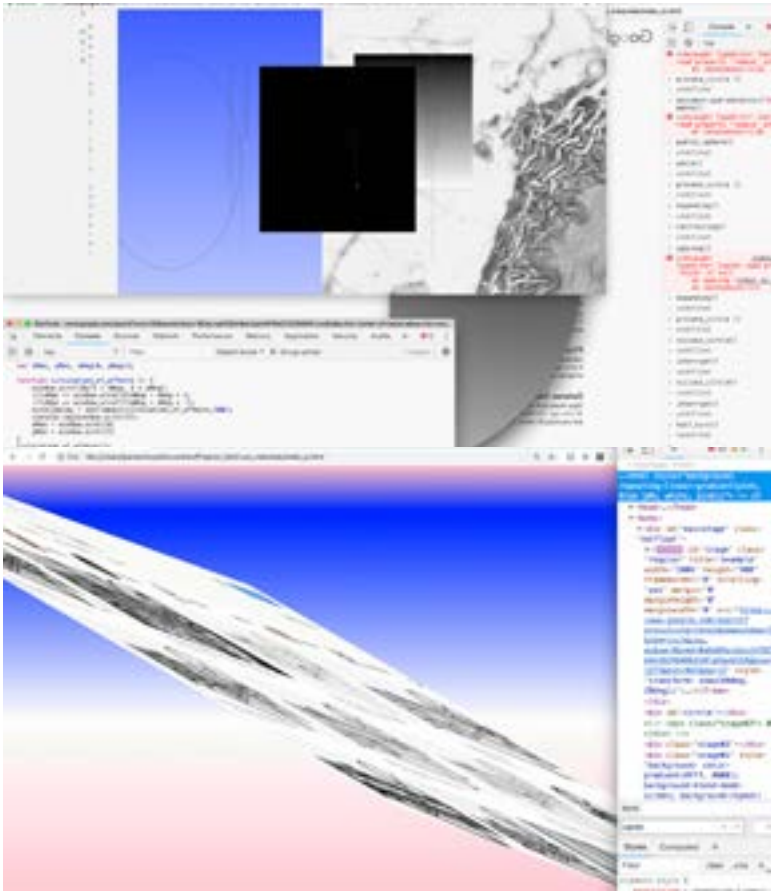
Algorithms and data infiltrate our every move. The data and the way it is structured, how networks are connected, and their status as public or private create boundaries and hierarchies. We want to develop a critical understanding by making these hidden processes visible and experiential.

In particular within media technologies, we can observe the tactical use and re-purposing of the settings, protocols, and abstract status of notations which determine the concrete conditions and ways in which we inhabit and produce both physical and digital spaces. Under the hypothesis that our interfaces are "scripted" with ideologies, our aim was to engage in critical practices of live notation by understanding the political significance of choreographic references.

Choreographies of the Circle & Other Geometries explores the construction of a modular system that bridges our research, methodologies, and technical apparati. We have been engaging in different formats such as performances, workshops, open-source software, and project documentation as modes of sharing.

We are now in the process of building a library and tools for the modification of real-time web environments involving not only audio and visuals but also content from the web browser (such as search engine results). It is synced in a peer-to-peer manner, meaning that each performer has the ability to modify and execute code on the other performers' systems and to do so without the use

of a central server. And key to this environment is that it allows users to define their own vocabulary in multiple languages, shaping both the technical and conceptual framing of the piece, and in doing so employ esoteric programming. We are sharing an example from the code we have been developing, in other words, a recipe or choreographic script for you to try!



Screenshot from a Círculo e Meio | Circle & Half performance. Image credit: Joana Chicau, Renick Bell.

Ingredients

As a starting point, you will need the main elements or meta-ingredients listed below:

1. stage { specific HTML sections are set as stage by defining, for example: };
2. props { aka (theatrical) property, it is an object used on stage or screen; for example: text material; image; iframes; sounds... };
3. choreographic glossary { list of movement functions or actions which use props that are placed in different stages; actions can generate for example: audio and visuals); and be called for example: breathing ( ) };
4. dancers { dancers are algorithmic characters that compose sequence of movement functions or actions };
5. performance score { is the sequence by which movement functions or actions are performed by dancers; altogether forming a complex choreographic relational filed };

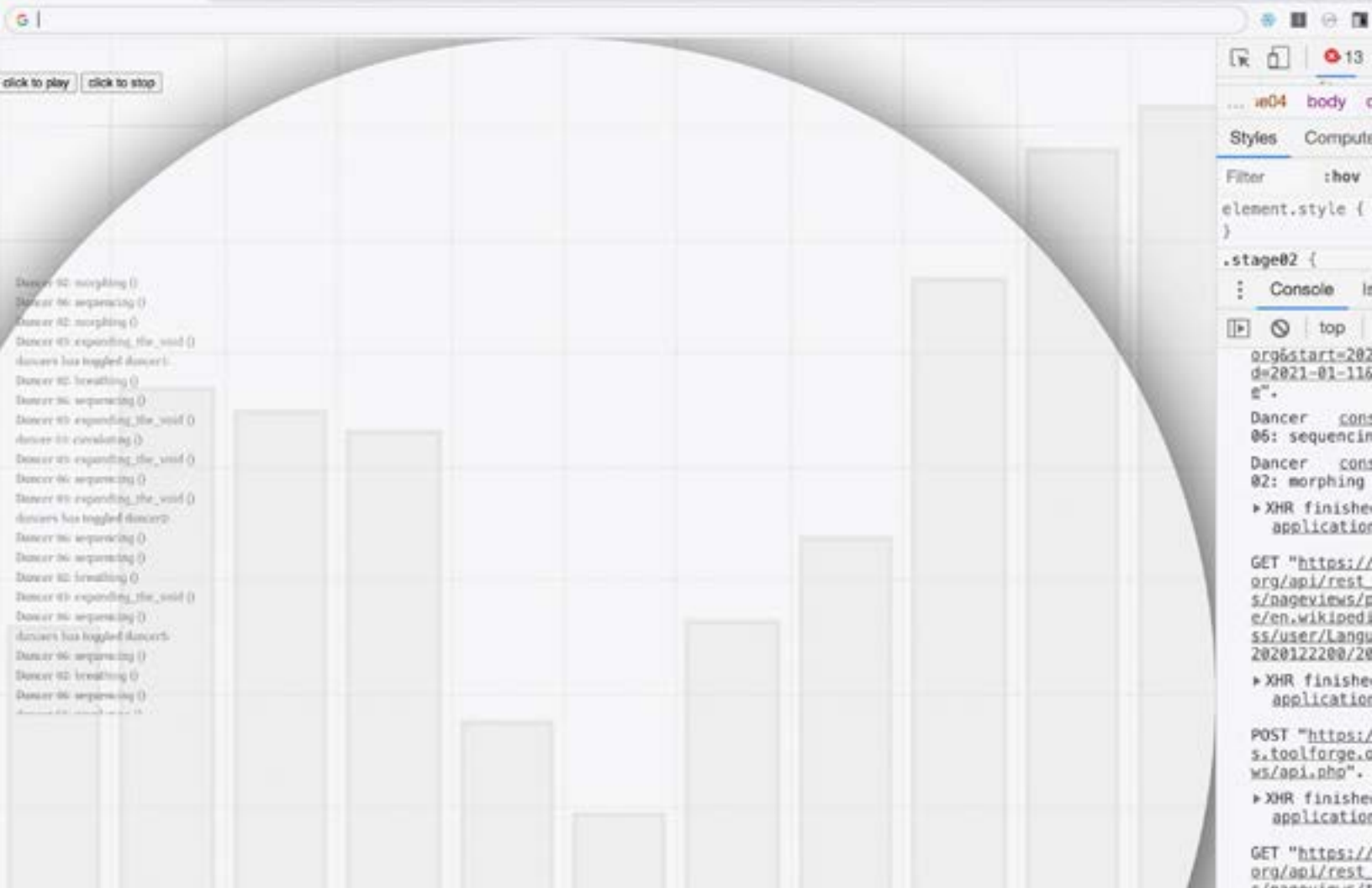
Steps

Here is an example of a more detailed recipe, specifically for creating the choreographic glossary:

1. // find the file "geometriesStarter.html" in this repo: https://gitlab.com/OtherGeometries/Cookbook/-/tree/main/example-code
2. // and add a new section for the code: <script type="text/javascript"> … </script>

Screenshot from a Círculo e Meio | Circle & Half performance. Image credit: Joana Chicau, Renick Bell.

```
3. // create the empty vocabulary object: let
   vocabulary = {};
4. // add the various vocabulary words to the
   vocabulary;
5. // first create an object for the word, then
   add instances for each word to the corre-
   sponding object;
   // note that there are instances for DOM
   (changing the browser window contents) and
   tone (making sound);
   // each instance should be a function;
   // at the moment, it should have two argu-
   ments: one for time and one to consume items
   from a parameter array;
6. // we will name this action applied to the
   text as BREATHING
   let x = document.querySelector(“#image”);
   vocabulary[“breathing”] = {}
   vocabulary[“breathing”].DOM =
```


click to play
click to stop
Styles
Console
top

```
((time,value) => { Tone.Draw.schedule(() => {
x.style.transform=`scale(${value.args[0]})`;
console.log('dancer 101: breathing ()');
}, time);
})
```

7.
```
// and now let the dance begin! (aka recipe
in action)
let p = new Performance();
// create the dancers to be used;
p.newdancer('dancer101')
p.dancers.dancer101.rhythm = m.rhythms.
rhythm1.slice()
p.dancers.dancer101.part = new Tone.Part(
vocabulary["breathing"].DOM
, beatsToEvents(p.dancers.dancer101.rhythm)
)
p.dancers.dancer101.part.loop = true;
p.dancers.dancer101.part.loopEnd = "2m";
p.dancers.dancer101.part.probability = 1;
p.dancers.dancer101.changeRhythmAn-
dArgs([0,1,2,3,4,5,6,7], [["0.5"],["0.9"],["0
.05"],["1"],["5"]])
```

8.
```
// two things necessary to get tone to start;
// to be done in the web console;
Tone.start()
Tone.Transport.start()
```

9.
```
// actually start the dancer
p.dancers.dancer101.start(inNMeasures(2))
```

Project Links

We have created temporary stage or a kitchen stand within which similar recipes can be tried out.

More info on our project can be found at:

» Project's website.
» Project's wiki.
» Code repository.

Further Readings

» An Interface for Realtime Music Using Interpreted Haskell (2011), Renick Bell.
» A Webpage in Two Acts (2017), Joana Chicau.
» <body> Building: the code performance of Joana Chicau (2019), Daniel Temkin.
» Other Geometries (2019), Femke Snelting.
» Politics of Musical Interfaces: Ideologies and Digital Disenchantment (2016), Enrique Tomás.
» On Choreographic Languages, Kate Sicchio.
» Other Geometries Workshop: Collection of References, Joana Chicau & Renick Bell.

Q&A

What is the context or background that inspired your recipe?

The authors' background in choreography (Chicau) and music (Bell) has inspired them to dive deeper into systems of notations from the two fields. As a starting point, we collected musical and choreographic scores that reference principles of non-linear composition, non-hegemonic time and space constructs, and techno-feminist understandings.

We then analyzed various viewpoints from the sphere of dance and music and the socio-political meanings that surround such geometries, starting with the notion of the 'circle'. The inventory being built supplies triggers for questioning the abstractions and their normative power and geometrical definitions, including their powers of transgression, commonality, consciousness, and freedom.

Which community are you offering the recipe to?

The project centrally involves live programming tools, approaches, usages, and we hope to engage the communities that employ them: software development, interface design, algorithmic performances, media art, digital humanities and education.

Along with the development of the performance piece and related tools, we also hope to make the

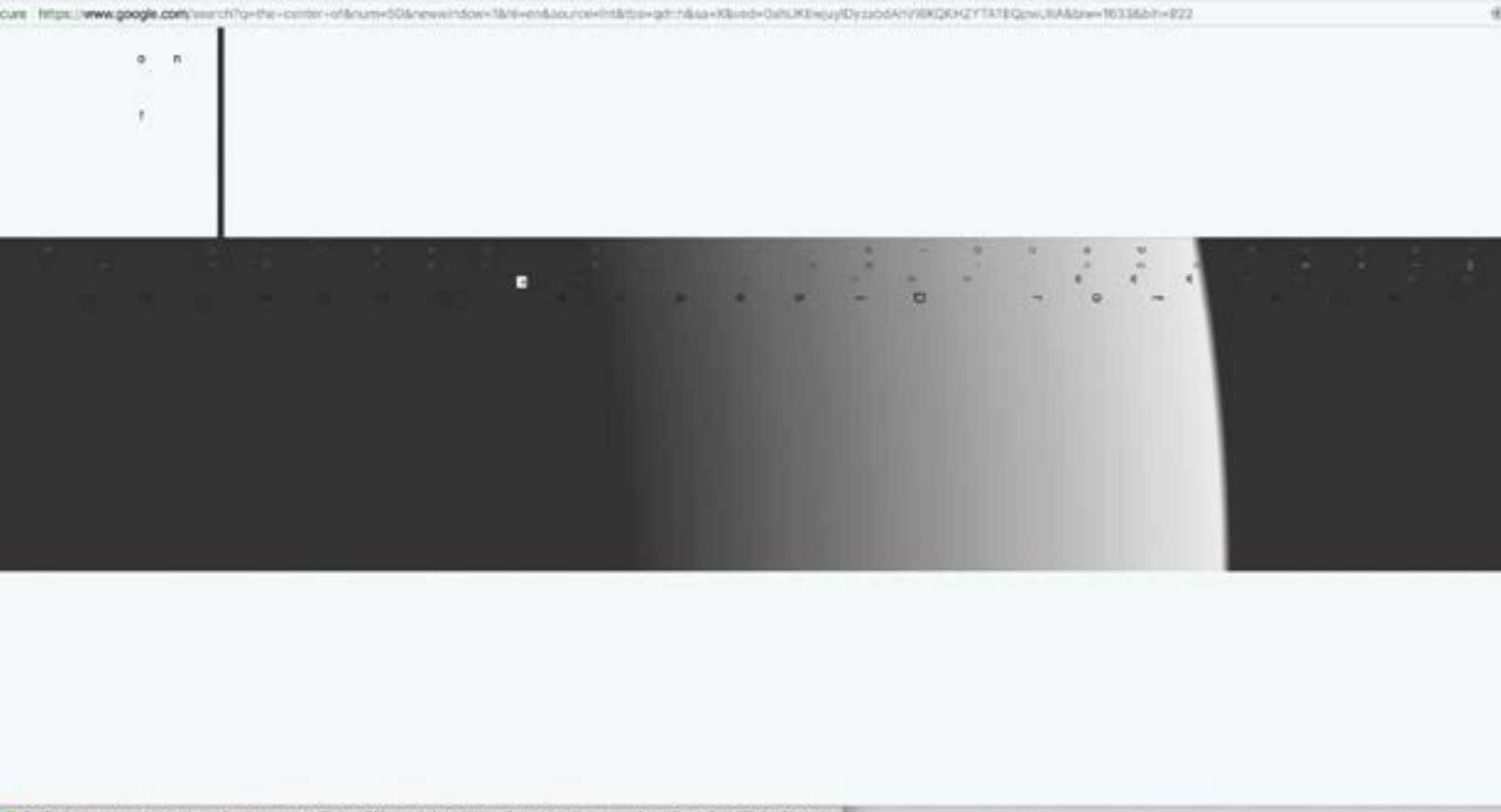
work accessible and to reach out to more general audiences, helping the community to grow. We aim to present the work to different audiences and contexts, from community-driven ones to larger-scale digital-culture-art-tech-sound events.

How does your submission relate to intersectional feminism?

Computer sciences and algorithmic performance can reflect patriarchal hierarchies rooted in Anglo traditions through the role of English as one pillar of the base of programming. In Choreographies of the Circle and Other Geometries, we have a multi-lingual approach and we engage with esoteric languages as a way to challenge established orders and for devising more inclusive modes of participation.

Another tactic built in our project tools is the fact that each performer can deeply influence the behaviour of the other's performers system in real-time. Opening a new imagining of how current tools and ensembles can attempt to challenge dominant powers inherent in performance formats.

Screenshot from a Círculo e Meio | Circle & Half performance. Image credit: Joana Chicau, Renick Bell.


Elements
Console
Sources
Network
Performance
Memory
Application
Security
top
Filter
Default levels
Group similar
1 hidden

Failing to CODE

Becca Rose

#failure #stupidity #unmaking #irrelevant

Failing to CODE is a way of approaching computing education, it can be used to support educators to expand their creative coding pedagogical practice. The aim of the resource is to explore plurality in learning styles through working with ideas from feminist pedagogies. This recipe is a bit like giving some "flavor inspirations" to the cookbook - the aim is to inspire an expanded way rather than step-by-step. Educators can take on elements of the characteristics into their practice in the way that works best for them.

Image credit: Becca Rose.

The Recipe

Failure

> *"We might read failure, for example as a refusal of master, a critique of the intuitive within capitalism between success and profit, and as a counterhegmonic discourse of losing. Stupidity could refer not simple to a lack of knowledge but to the limits of certain forms of knowing and certain ways of inhabiting structures of knowing." – Jack Halberstam, The Queer Art of Failure*

Halberstam argues that failure is a fertile space for challenging the logic of success within dominant systems of knowledge production. The maintenance of narrow forms of knowing upholds the economic and social pillars (such as colonialism and capitalism) that assembled the knowledge regions into disciplines as forms of control.

In this recipe I introduce "flavors" that characterize failure based on a reading of *The Queer Art of Failure*. These are characteristics of failure such as stupidity, losing, unmaking, undoing, unbecoming, or not knowing or acts that are small, antimonumental, and irrelevant. I describe examples of how these flavors might be part of a learning experience – based on activities I have developed in my practice as an educator. I then go on to introduce some of the concepts that helped shape these flavors, and make some connections between failure, pedagogy and computing.

Stupidity

"Stupidity could refer not simply to a lack of knowledge but to the limits of certain forms of knowing and certain ways of inhabiting structures of knowing."

– Jack Halberstam, The Queer Art of Failure

For Halberstam, failing to fit into knowledge disciplines through "*losing, forgetting, unmaking, undoing, unbecoming*, not knowing" is a way of offering "*more creative, more cooperative, more surprising ways of being in the world*" (Halberstam, 2011:2). In this sense, failure is a paradoxical act that dismantles the monuments of the knowledge-power complex while also existing, full-bodied, and fully-being within this.

The potato print's apparent stupidity demonstrates their failure as knowledge in the computing context. Potato printing resonates with not knowing in this space, with potential for further "detours, twists, and turns through knowing and confusion" (Halberstam, 2014). They are teaching us to know from unknowing ways, with humor.

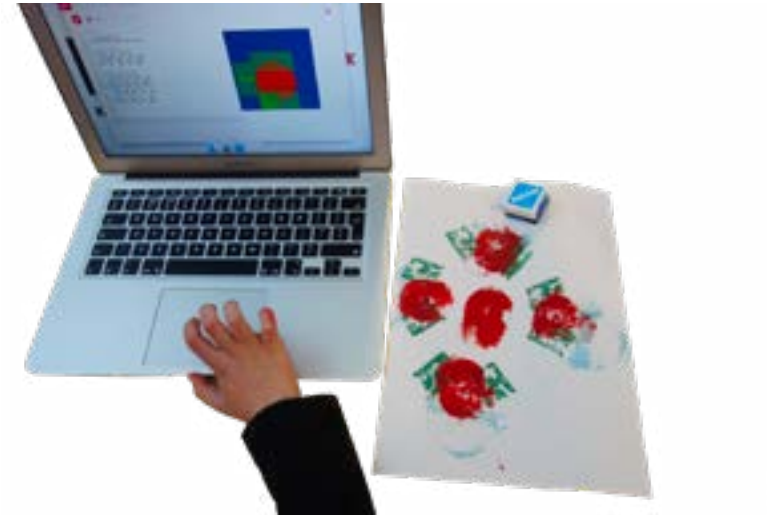


Image credit: Becca Rose.

Unmaking

> *"The queer art of failure dismantles the logics of success and failure with which we currently live. Under certain circumstances failing, losing, forgetting, unmaking, undoing, unbecoming, not knowing may in fact offer more creative, more cooperative, more surprising ways of being in the world." – Jack Halberstam, The Queer Art of Failure*

The contrast in materials between the pixels and the inky potato prints creates a messy and dynamic relationship with the computer – where the making and unmaking process shifts between the screen and paper. Learners print, then code, then remake print to work better with code, then remake code to work better with print. The pixels and ink are in dialogue, neither definite nor static. With the active process of printing, coding, imagining, making, and back to printing again, there was a constant adjustment between the analogue inky space and the digital pixely space.

Image credit: Becca Rose.

Irrelevant

> *"I believe in low theory in popular places, in the small, the inconsequential, the antimonumental, the micro, the irrelevant; I believe in making a difference by thinking little thoughts and sharing them widely. I seek to provoke, annoy,*

bother, irritate, and amuse; I am chasing small projects, micropolitics, hunches, whims, fancies." – Jack Halberstam, The Queer Art of Failure

Failing to CODE is based on learning about computing in non-computational ways. Rather than having a mindset of "Computational Thinking" (such as abstraction, problem solving, automation or information), these objects lead us to explore coding through failing at computation. Instead, we think through tangible things, messiness, idiosyncrasies or textures. These failures of thinking like a computer are based in bringing the body into the learning space.

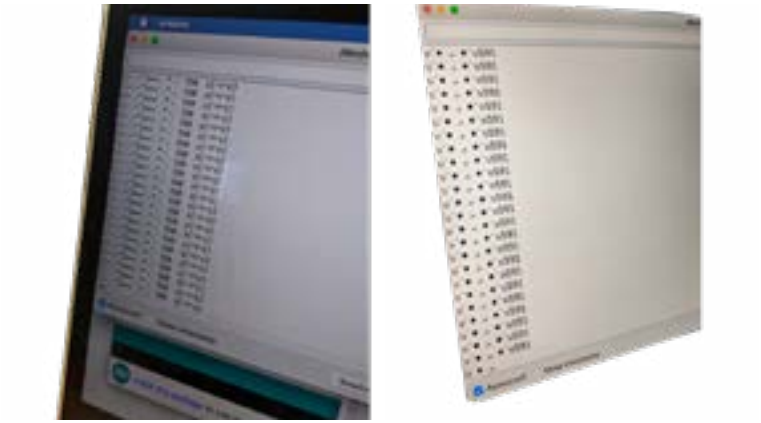


Image credit: Becca Rose.

"The pleasure of teaching is an act of resistance countering the overwhelming boredom, uninterest, and apathy that so often characterize the way professors and students feel about teaching and learning, about the classroom experience." – bell hooks, Teaching to Transgress

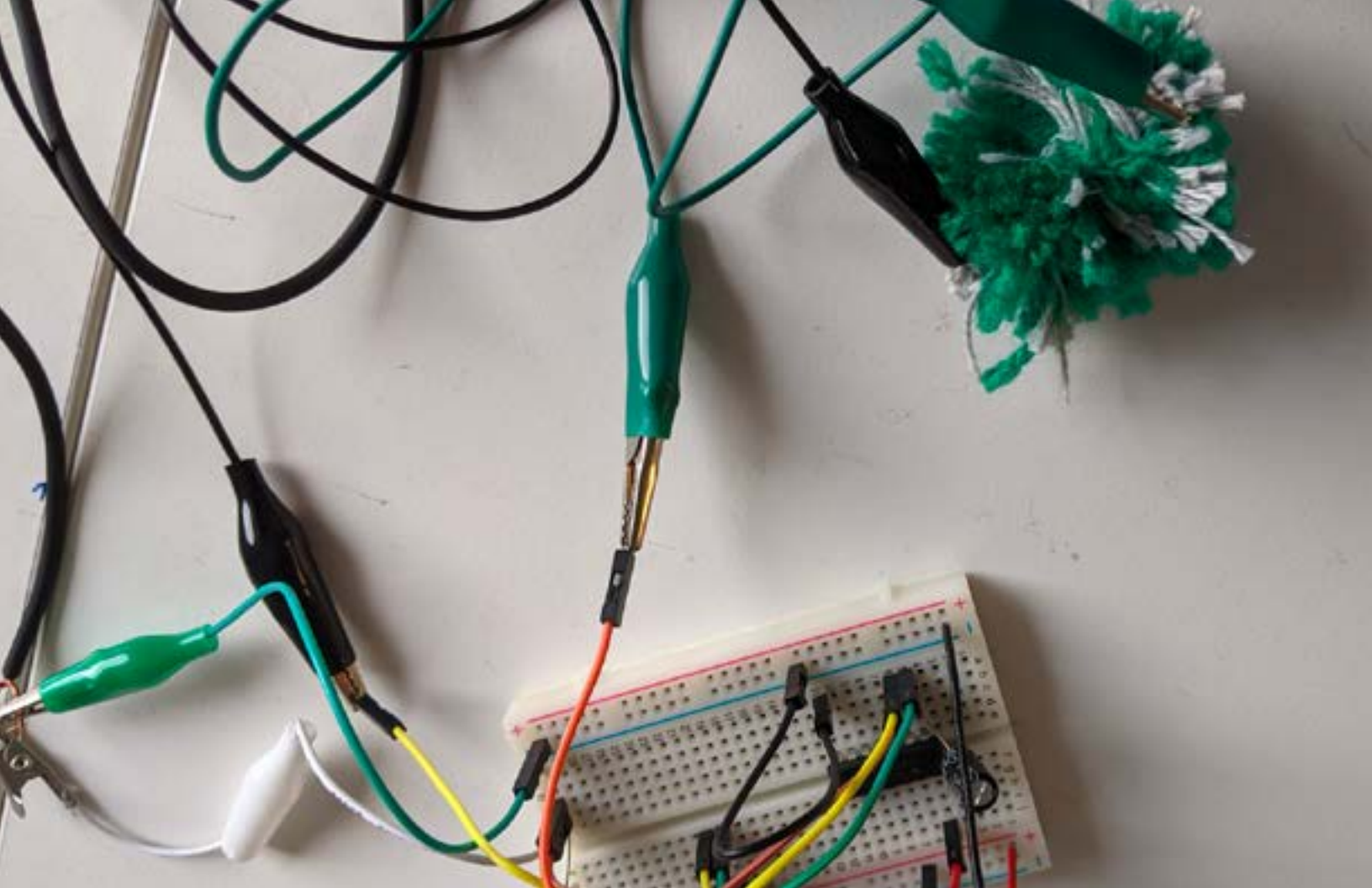
In my practice I often experiment with materially active modes of participating. My aim is to develop ways of introducing code based on creative play – bringing in the body into the learning space in ways that are joyful and fun, without reducing experiences to algorithmic abstraction.

hooks argues that engaged pedagogies demand the full sense of being in the body in the teaching and learning process. Making space in the classroom for emotion is part of bringing the full body into the learning.

Key to both hooks and Halberstam's viewpoint on knowing is that it is founded on ways of being in the world. In a similar light to hooks' engaged pedagogies, Halberstam critiques static knowledge practices and argues that queer failures bring about ways of ambulatory knowing – where knowledge is based on mode, process or action. *The Queer Art of Failure* goes on to discuss how vulnerabilities and multiplicities of failure can work to erode hierarchical knowledge.

One of the reasons I started exploring this idea of failure is to help think about some of the issues with computing knowledge. Wendy Hui Kyong Chun (2004) questions the foundation of computing knowledge, and deconstructs software through revisiting the history from a material perspective. She refers to programmers as "users" to illustrate that they are constructed by the conventions of programming languages, rather than possessing the agency that is commonly perceived coding has.

The conditions in which programming developed



have shaped it to how it is now. Chun threads the stories of machine materiality, gendered languages of control, and hierarchical social interactions, to re-position the history of computing as an entanglement of these (rather than a static, linier discipline). Based on this historic materialism, Chun illuminates the limitations of the computing discipline, and argues that software is ideology.

Learning about coding technologies from queer perspectives on failure brings into question some of the capitalist structures that uphold coding technologies, such as the concept of binary, solution based approaches, hierarchies or individualism. The role of *Failing to CODE* is to use learning objects to question the foundations of computing knowledge, as a way to cut through the ideological construct that has been developed from the entanglement of material conditions of its production. Bringing objects of failure to the centre of learning is a full body engagement in coding and computing.

Further Readings

- Teaching to Transgress (1994), bell hooks
- The Queer Art of Failure (2014), Jack Halberstam
- On Software, or the Persistence of Visual Knowledge (2004), Wendy Hui Kyong Chun

Q&A

What is the context or background that inspired your recipe?

Bringing failure to the centre of learning is a fertile space to engage in coding or computing. As educators, we know that the ways of being in the world are fundamental to how we learn, and learning new knowledge is interwoven with our backgrounds, contexts, situations, and perspectives.

I am inspired by ideas from the Queer Art of Failure (Halberstam, 2014) because of the relationship that Halberstam draws between ways of being and ways of knowing. Learning computational thinking from queer perspectives on failure brings into question some of the capitalist structures that uphold coding knowledges, such as the concept of binary, solution based approaches, hierarchies of knowing, or individualism.

Which community are you offering the recipe to?

I offer this recipe to coding educators from both non-formal and formal education spaces who'd like to experiment with refusing to think like a computer. Rather than step-by-step, this recipe is based on "flavors" that are aimed as inspiring educators for the context they work in.

Over the past few years I have been working closely with educators in non-formal learning communities (such as Knowle West Media Centre

in Bristol, UK). I have taught coding (usually using p5.js or Arduino), and I've also observed and learned from other educators' work. This recipe reflects this non-formal approach, where activities are flexible and adapted to support learners from different contexts or backgrounds.

How does your submission relate to intersectional feminism?

Failing to CODE aims to challenge and subvert hierarchical knowledge practices by offering suggestions for multiple ways of connecting to code activities, and also to each other. It is positioned outside of dominant hierarchies in knowledge practices, such individualism, linear modes of success, or binary thinking.

As well as drawing from queer feminist perspective, this work relates to ideas from feminist pedagogue bell hooks, who suggests that learning (and knowing) is based on full-bodied ways of being in the world. The recipe also relates to feminist computer scientist Wendy Hui Kyong Chun, who describes the material development of software as gendered.

How to code human bodies for devouring and mutual enlightenment

Mario Guzman

#anthropophagy #hyperCodedBodies
#latinAmerica

According to anthropologist Viveiros de Castro, the Amazonian cosmogonies identity categories (individual, collective, ethnical or cosmological) are expressed mainly through bodily languages, particularly through food and bodily education.

This recipe is about the act of devouring and assimilating Otherness. It is also an attempt to organize a reflection about the perception of our community's identity development and the creative relationship with our body's transmutation as part of a critical swallowing perspective.

Can devouring become a gesture of creativity, a way of inhabiting the differences through bodily transformations? As Gloria E. Anzaldúa puts it: "The body is the ground of thought. The

body is a text. Writing is not about being in your head; it's about being in your body."

The Recipe

Tupi or not tupi :[1] building a community

On the Amerindian perspectivism, the interior/ exterior social dichotomy dissolves. It is not on culture but bodies where a fundamental difference materializes, turning the Other, the stranger or the foreigner into a source of subjectivation. The radical alterity of the Other opens a novel relationship with knowledge/ truth and an agglutinating principle for the community.

In the Latin American realm, identity is constantly in tension. Sometimes imposed by colonizing definitions, and sometimes by a mandate to decolonize ourselves.

> *How can we simultaneously experiment with our past and critically swallow new codes to shapeshift and extend our community body's boundaries? Do we need to define ourselves in order to have a community?*

1 The Tupi, a Brazilian indigenous tribe, cannibalized their enemies to absorb their strength.

The ritual: hyper-coding bodies

The human body can be placed on a confronting structure: human/animal, exterior/interior, civilized/savage, soulful/soulless. Nevertheless, cannibalism occurs within a ritual, within a process of coding beyond binary oppositions and into a process of relational existence. The Other exists because it is projected in relation to a cosmological network.

In Amazonian cannibalism, what is sought is incorporating the subjective aspect of the Other, which is, therefore, hyper-subjectivized, and not de-subjectivized, as is the case with animal bodies. Animals are inhuman; we are all connected.

> *To eat a body, you need to code it; but to eat a human body, you need to ritualize it, spiritualize it: hyper-code it. Cannibalism is never just about eating.*

It focuses much more on the ritual that hyper-subjectivizes alterity. It's only within this system where the act of eating human flesh acquires meaning; flesh is the meaning.

void( ) {eating( )};

From a cannibal perspective, eating is part of a predatory cosmovision: the night eats the sun, the earth engulfs the corpses of living beings, the gods drink the blood of the sacrifices, the warriors devour the prisoners, and men eat the gods represented in corn figures. The indigenous world is a universe saturated with multiple devouring processes. The

cannibal cosmogony implies a dynamic in which bodily and energetic transformations proliferate across men, plants, animals and sacred forces.

Eating a human body is about absorbing relational universes. Expansion from incorporation. Devouring energy, galaxies, black holes. All that can not be satiated. It's about turning matter into electrified particles. Engulfing as mutation precipitation. There is nothing to satiate. Shapeshifting into a jaguar's body, into a jaguar's eyes. The eye of the flesh looks for a dissolution of the human/animal boundary and the radical spiritualization of the world. Eating allows the continuity of the symbolic universe and the divinization of the body.

> *What does it mean to eat a hyper-coded body? To multiply a trans-dialogical hunger, to demand the cosmic cycle's continuation.*

Transcending through engulfing flesh

Guarani's anthropophagy fundamental principle states that a body accumulates energy throughout its existence. This energy can be used by another body to expand its consciousness. Guarani's vital goal is to transcend the limits of daily existence by accessing a state where a person escapes harm and even death. Cannibalism is part of this path to access a consciousness state.

In Amazonian shamanism, this kind of state can also be portrayed as the ability to deliberately cross bodily barriers and adopt the perspective

of allospecific subjectivities. Shamans are able to assume the role of active interlocutors in the trans-species dialogue. But above all, they are able to return to tell the community's story and narrate the engulfing cosmic process as an encounter/exchange of perspectives.

> *Cannibalism is not an absorption of the Other, meaning incorporating it as part of a self-identity. On the contrary, it is a way of going out of oneself, of transforming oneself into the Other.*

The anthropophagous act does not annul the difference or the radical alterity it confronts; it repositions it in a simultaneously modified interiority. The exterior difference does not disappear when it is devoured; it survives in an interior that becomes something Other.

As this something Other, What elements should we highlight to build a narrative that recognizes community as a trans-species dialogical multiplicity? How can we build multicultural cosmic politics and an insatiable economy of Otherness?

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» Moyer, Carrie, and Sue Schaffner. DAM SCUM. 1996.

» The Metropolitan Museum of Art. "Kiki Smith | Lilith." Accessed January 25, 2022.– based on activities I have developed in my practice as an educator. I then go on to introduce some of the concepts that helped shape these flavors, and make some connections between failure, pedagogy and computing.

Q&A

What is the context or background that inspired your recipe?

Tupi or not tupi, that is the question.
– Anthropophagic Manifesto (1928)

Anthropofagy's concept, as part of Brazil's cultural history, became a form of asserting independence over colonization, a metaphor for cultural resistance and criticism of European representation of Latino American art.

We need a new perspective for Anthropophagic figures: the cannibal, the female maneater, the indigenous, and the LA artists ingesting different cosmological codes into their diet. We need a perspective on devouring spiritual bodies as a form of cooking, consuming, and creating!

Which community are you offering the recipe to?

Latinoamerican Artists and those seeking an expanded notion of identity. To those wandering through different language territories and occupying multiple national spaces. Artists whose praxis has become a mix of identities, materials, technologies and cultural codes; to those whose bodies are placed between shifting spaces.

As all cultural components become open to mixture, a new cosmic cannibalism requires us to

think: who swallows whom? How can a new cannibal artistic approach create a dynamic set of strategies for transculturation, appropriation and syncretism that resist origin tokenization? Should the violence associated with this process be defused or embraced?

How does your submission relate to intersectional feminism?

Intersectionality depicts how people's social identities overlap and display diverse forms of inequality operating together and deepening each other.

Indigenous tribes, cannibals and women (maneaters*) share common struggles: their subjective configuration and modes of appropriating Otherness are often labeled as uncivilized, inhuman, morally reprehensible or pathological. Consequently, their worldview must be repressed, humiliated or colonized. Can this happen to the new cannibal Latinoamerican Artists?

Through intersectional feminism, those experiencing overlapping inequality can question concurrent conditions of oppression to understand the depths of the inequity and the relationships among them.

* Is cannibalism the final feminism frontier?

OCR 01-25-2179

Winnie Yoe

#boundary #participatory
#physicalComputing

OCR 01-25-2179 is an interactive installation to materialize a boundary line.

Excerpts from a personal letter detailing events that led to a Title IX filing and subsequently an investigation by the U.S. Department of Education is laser etched in decreasing font size. The text gets smaller as the letter gets more personal. If the audience decides to cross the line (projected on the floor) to read the text, the light flickers/fades and turns off. When the audience steps back, the light turns back on. The time when they crossed the line is printed on the display, which is also recorded on a SD card that I collect at the end of the day.

The exhibition of the piece saw different responses – some stepped back behind the line, some stayed for a while, some ignored the light and read the entire letter, some read out loud passages of the letter.

Image credit: Winnie Yoe.

Image credit: Winnie Yoe.

The Recipe

OCR 01-25-2179 was one of three projects created, driven by my experience filing a Title IX complaint and reflecting on the limitations of procedural measures in seeking social justice. The piece is a recipe for those, particularly in marginalized communities, who have to constantly negotiate their boundaries and different power dynamics. The piece uses participatory approaches to allow for a wide but personal experience.

The interaction in the piece is subtle but unsettling. The quiet nature of the piece is deliberate in leaving space for the nuances and complicated emotions that are often associated with the topic of boundary. As the audience approaches the piece or witnesses others interacting with the piece, they negotiate between the urge to read the personal narrative etched on the piece and the suggestion, prompted by the light that switched off, that they should not be reading the narrative. While the letter itself is about boundary and abuse, the interaction between the audience and the etched letter adds another layer of boundary to be negotiated. This layered interaction and the liberty given to how the audience interacts with accounts of the artist's traumatic experience, to avoid distilling abuse into simplified and singular narratives reveals the different power dynamics in play.

The collection of data regarding when the audience crossed the line and how long they remained over the line, which is the final

Image credit: Winnie Yoe.

act performed by the artist at the end of the installation period, becomes a physical artifact, serving as a piece of evidence and a metaphor of the artist's ultimate ownership of the narrative.

Code

In terms of components, the installation includes a distance sensor, a LCD display, and a LED tube light. The distance read by the sensor is an "input", which depending on its reading, controls the behavior of the LCD display and LED light — the "output".

A coding concept behind the piece is setting conditions and calling functions. Three conditions (highlighted on right) are set in this pieces:

1. If the audience distance is <= 30cm and the light has not Flickered = The function flicker( ) is called and the lights flicker.
2. If the audience distance is <= 30cm and the light has flickered already = The lights turn off (The value for off is 0).
3. If f the audience's distance from the piece is more than 30 Cm = The lights turn back on (The value for on is 255).

Q&A

What is the context or background that inspired your recipe?

This recipe was inspired by a series of traumatic events that led to a Title IX filing and investigation. As I navigate an unfamiliar and lengthy legal process, I began reflecting on the limitations of procedural measures in seeking social justice. I felt the need to craft and share my own narrative when authorities and others around me denied my experience and turned to creative mediums to create a space to grieve, make sense, and search for closure.

Which community are you offering the recipe to?

To those in marginalized communities, who have to constantly negotiate their boundaries and different power dynamics, who have felt lost against powers and scenarios much larger than them.

How does your submission relate to intersectional feminism?

The form and participatory approach of the piece is shaped by my personal experience navigating oppressive systems as a woman of color and an immigrant. The piece is seemingly subtle but startling, rather than being prescriptive, the piece offers a space for participants to evaluate their power and their role as the gaze. Using relatively simple electronics and fabrication techniques, the piece offers an alternative in discussing how one negotiates boundaries in oppressive systems.

PAC-MOM: A Practical Rethinking of the "Classics"

Annina Rüst

#gameDesign #mom
#foodInsecurity

In this recipe, I proposing using game re-design to create an alternative view of "classic" video games from a feminist perspective. To illustrate this technique, I am describing PAC-MOM, a digital game that I created to counter and expand the popular 1980s game PAC-MAN. I am offering this practical rethinking of a "classic" game as a recipe to challenge and rethink a canon of games that are uncritically revered by game enthusiasts and often recreated with minor modification by individuals and organizations.

Image credit: Annina Rüst. Share however you want.

The Recipe

In her book Coin-operated Americans Carly A. Kocurek describes how video game arcades became a space claimed by boys and young men in the US in the 1980s.[1] A game common to 1980s video game arcades was PAC-MAN. PAC-MAN is classified by game scholars as an eating game.[2] I created the game PAC-MOM as a parody of PAC-MAN. It is a game about gender and food insecurity. PAC-MOM takes place in a situation where accessing food requires PAC-MOM to work a disproportionate amount more than PAC-MAN. In addition to having

1 Carly A Kocurek (2015) Coin-operated Americans, University of Minnesota Press.

2 Frans Mäyrä, 2008, An Introduction to Game Studies, Sage Publications. P. 70.

Moms are the sole or primary breadwinners in half of all families with children under 18 in the US

PAC-MOM LEVEL SELECTION

Play the training level to find out why PAC-MOM has to work harder for food pellets than PAC-MAN !

... or play the main level !

TRAINING LEVEL

MAIN LEVEL

PAC-MOM CHARACTER CUSTOMIZATION

How much longer does this PAC-MOM have to work for the same amount of food as PAC-MAN? (drag the cherry to adjust the percentage)

0 percent

100 percent

Select this PAC-MOM's enemies!

PLAY!

to work more for the same pellets, PAC-MOM has to avoid a set of powerful ghost-enemies including patriarchy, misogyny, racism, ableism, and many more.

Every discipline has its canon of "important" works. The longer a canon exists, the more immutable it becomes. Instead of a calcified collection of works, I am proposing a continuous refiguring of works in a canon to encourage continued questioning of a discipline's history. Instead of worshipping on the altar of the "classics", we should be creating alternative views of works seen as "historic". Below is a set of instructions for this process.

Steps

1. Find "classic" games (or other media artifacts) that are part of the "canon" in a specific genre.
2. Identify conceptual aspects in these games that seem culturally antiquated and are ripe for re-interpretation.
3. Modify the rhetoric of the chosen game to create an outcome that reveals something about social inequities and intersectional identities that the original game is unable to do.
4. Test your concept with an intersectional audience. Integrate feedback.

Tip

The ingredients of humor and irony can help

make hard truths more palatable and easier to digest.

Reflection Prompts

My questions for creators of this kind of project are:

- How can you make a game parody that is more than just ironic?
- How can you modify the rhetoric of a classical game to expand what it is and how it works in culture?
- How can new classics be created that examine the past, communicate contemporary reality, and help us create a better future where a multitude of feminisms exist and are taken seriously in game development and in society more broadly?

Q&A

What is the context or background that inspired your recipe?

This recipe is inspired by my game PAC-MOM, a parody of the popular 1980s arcade game PAC-MAN. I wanted to create a game that addresses social inequities and intersectional identities. PAC-MAN is classified as an "eating game" by game scholars. I therefore created a parody, PAC-MOM, to communicate my ideas about motherhood and food insecurity. I also realized that "classic" games lend

themselves to re-interpretation. I therefore decided to create this recipe because I think that this mode of game re-creation is transferable to other games and might help other creators generate ideas.

Which community are you offering the recipe to?

I am offering this recipe to the game development community. Game developers often have a good sense of the history of our field. I am offering an example that re-examines this history. By re-designing a historic game, I am imagining a feminist future that could have been. I want game developers to see our field's history with different eyes, where every game is up to critical, speculative, and possibly utopian re-interpretation.

How does your submission relate to intersectional feminism?

My recipe is about designing alternative views of "classic" or "historic" video games. The example that I am giving is PAC-MOM, a reinterpretation of PAC-MAN. PAC-MOM is a game about gender, work, and food insecurity. Food insecurity is a complex intersectional issue. It affects single mothers most. It also affects women of color disproportionately due to the gender wage gap and related intersectional factors. As part of the game, I created a screen where the player can customize their own PAC-MOM. This does not just include customization of the game character herself but also of her enemies. These include classism, ageism, homophobia, transphobia and many more to illustrate that an individual's experience can be determined by multiple intersecting aspects.

MUJERES EN LOS TIEMPOS DE BORGES Y KAFKA

Tamara Moura Costa

#creativeCoding #generativeArt
#feministAndAntiracistActivism

Mujeres en los tiempos de Borges y Kafka (Women in Borges and Kafka's times) is a generative poem created in Processing, an open source programming language. The goal is to make evident and visible the construction of repressive meanings through literary pieces. Specifically, in this Women Project, the intention is to highlight the elaborated image that male writers made towards women, always inventing a weak, unbalanced character and as an object of consumption and bribery.

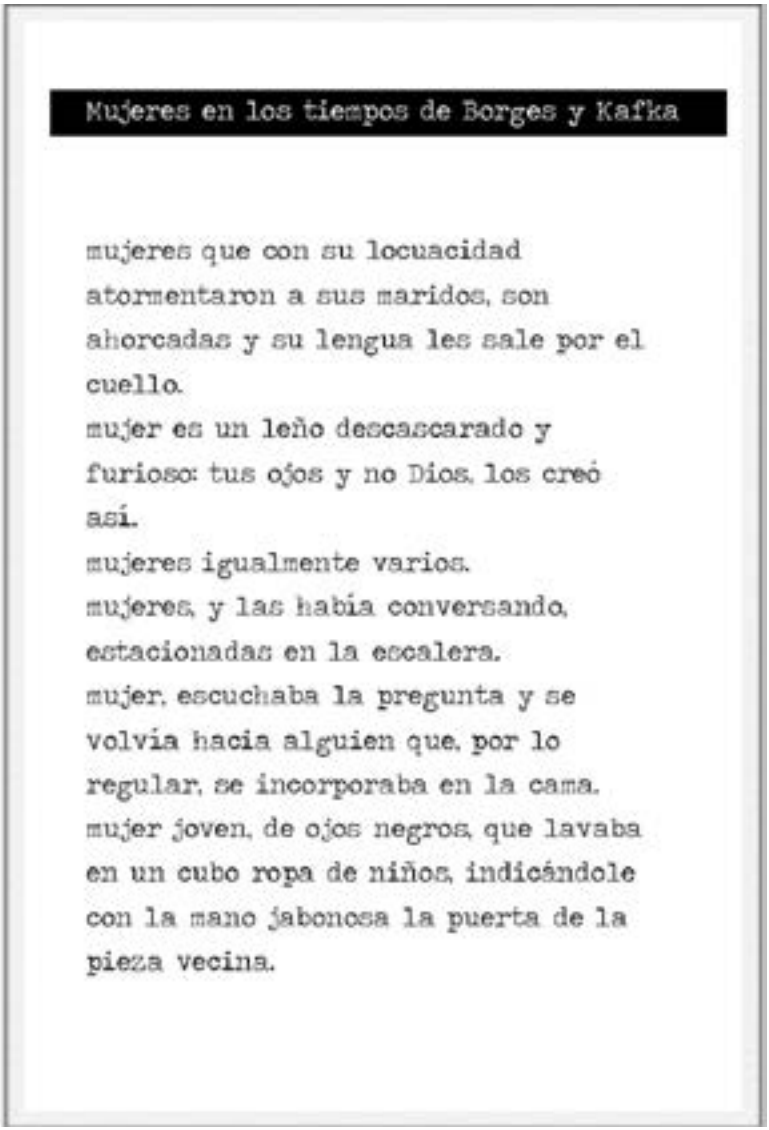
Feminist manifestations in Buenos Aires taken in 2018-2020. Image credit: Tamara Moura Costa.

The Recipe

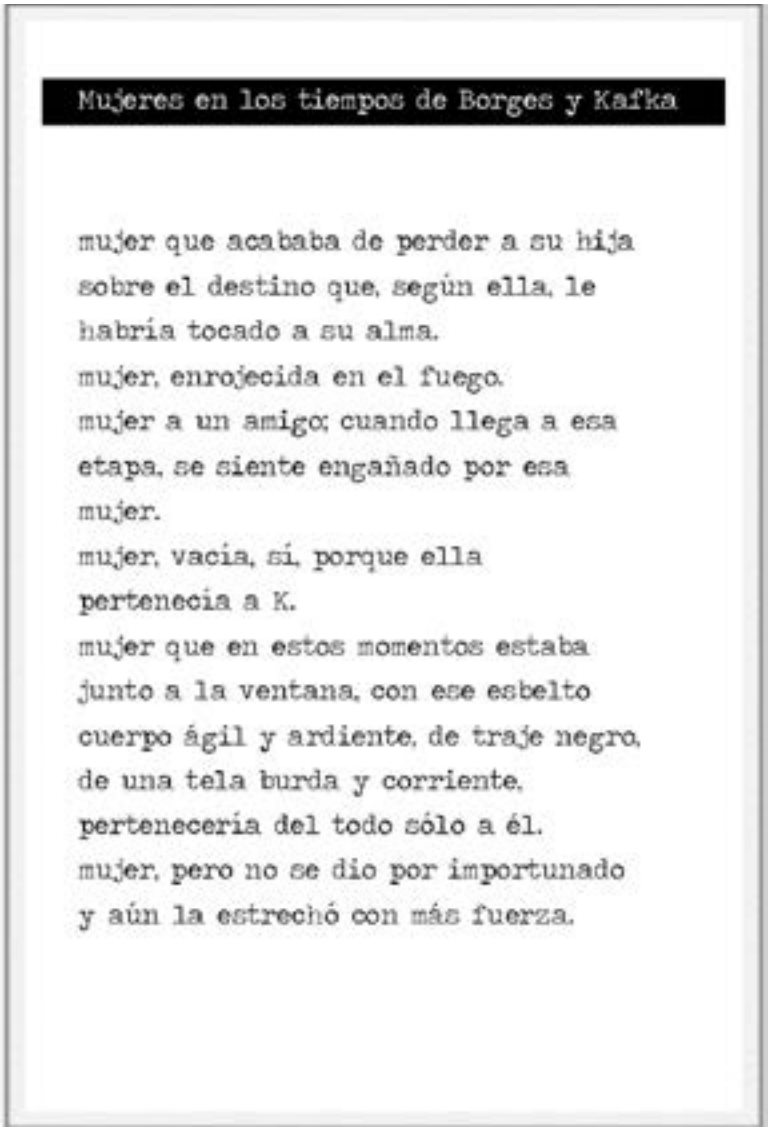
The current context in Argentina and Latin America, allows the work to be imbued with a sense of value that would not be the same in another time or space. The interpreter is associated with certain speeches or representations that function in a given society and energizes the adjudication of senses.

By using the texts Del infierno y del cielo (Of Hell and Heaven) (1960), Jorge Luis Borges and y El proceso (The Process) (1925), Franz Kafka; all the sentences containing the word “woman” or “women” are extracted from them, and a prose poetry of six verses (three of Borges’ book and three, from Kafka’s) is generated by randomly combining them.

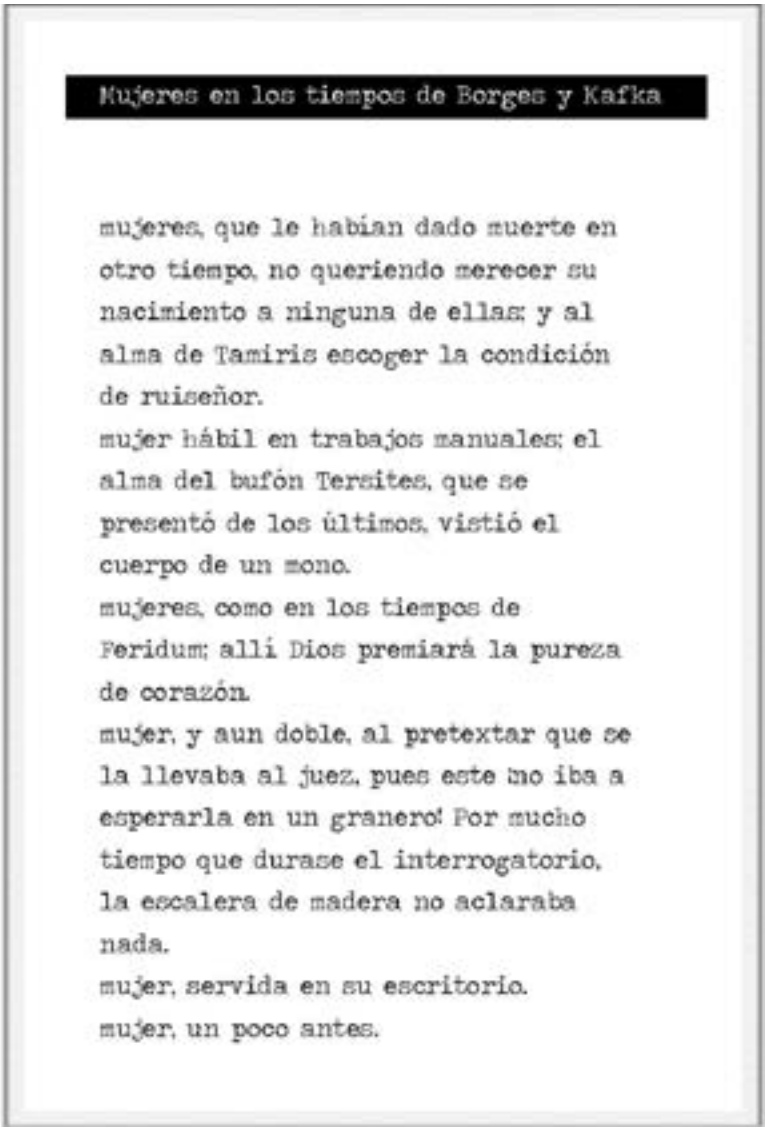
“Woman/en” appears at the beginning of each verse which gives it a literary structure and rhythm, thus creating an anaphora. The poem is automatically renewed after a certain time - calculated - with a new combination of random sentences that begin with the word “woman/en” and so on.


Mujeres en los tiempos de Borges y Kafka
mujeres que con su locuacidad
atormentaron a sus maridos, son
ahorcadas y su lengua les sale por el
cuello.
mujer es un leño descascarado y
furioso: tus ojos y no Dios, los creó
así.
mujeres igualmente varios.
mujeres, y las había conversando,
estacionadas en la escalera.
mujer, escuchaba la pregunta y se
volvía hacia alguien que, por lo
regular, se incorporaba en la cama.
mujer joven, de ojos negros, que lavaba
en un cubo ropa de niños, indicándole
con la mano jabonosa la puerta de la
pieza vecina.

Generative poem example 1
Image credit: Tamara Moura Costa.


Mujeres en los tiempos de Borges y Kafka
mujer que acababa de perder a su hija
sobre el destino que, según ella, le
habría tocado a su alma.
mujer, enrojecida en el fuego.
mujer a un amigo; cuando llega a esa
etapa, se siente engañado por esa
mujer.
mujer, vacía, sí, porque ella
pertenecía a K.
mujer que en estos momentos estaba
junto a la ventana, con ese esbelto
cuerpo ágil y ardiente, de traje negro,
de una tela burda y corriente,
pertenecería del todo sólo a él.
mujer, pero no se dio por importunado
y aún la estrechó con más fuerza.

Generative poem example 2.
Image credit: Tamara Moura Costa.


Mujeres en los tiempos de Borges y Kafka
mujeres, que le habían dado muerte en otro tiempo, no queriendo merecer su nacimiento a ninguna de ellas: y al alma de Tamiris escoger la condición de ruiseñor.
mujer hábil en trabajos manuales: el alma del bufón Tersites, que se presentó de los últimos, vistió el cuerpo de un mono.
mujeres, como en los tiempos de Feridum: allí Dios premiará la pureza de corazón.
mujer, y aun doble, al pretextar que se la llevaba al juez, pues este no iba a esperarla en un granero! Por mucho tiempo que durase el interrogatorio, la escalera de madera no aclaraba nada.
mujer, servida en su escritorio.
mujer, un poco antes.

Generative poem example 3.
Image credit: Tamara Moura Costa.

The entire project calls on society to question the use of the words chosen to express themselves, understanding the power they have to hurt. Language is not trivial, we use words as a form of construction of meaning and reality.

This work enables us to think in a different and updated way about the content of these texts and, this view is immersed in a context where feminist movements fight for their rights.

Feminist manifestations in Buenos Aires taken in 2018-2020. Image credit: Tamara Moura Costa.

Q&A

What is the context or background that inspired your recipe?

Specifically, in Argentina in 2018, time and place where this Project is born, the project of

Y ROSAS

Voluntary Interruption of Pregnancy in Deputies and Senators was voted, without obtaining favorable results for feminist movements. Later in 2019, this law is enacted, and feminist movements can continue to fight for their rights.

Which community are you offering the recipe to?

I'm offering this recipe to the Feminist, BIPOC and LGTBQ+ communities, also to any community who is interested in making visible suffering from systematic repressions that they suffer.

How does your submission relate to intersectional feminism?

The political strategies that were used for the subtraction of the phrases of the texts of Borges and Kafka, come from the gender theory and feminism, from the ideological constructions naturalized by the patriarchal system and that have been reconsidered lately.

The purpose of this work is to make a complaint, through a literary piece, about the elaborated and intentional image that male writers made towards women.

Feminist manifestations in Buenos Aires taken in 2018-2020. Image credit: Tamara Moura Costa.

Acknowledgements

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We are using Kirby as our CMS, and Codepen to generate graphics for the splash page.

Though contributions to the *Critical Coding Cookbook* come from around the world, we pay our respects to the Lenape people, and their unceded sovereign land, upon which this currently New York based team live and work.

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